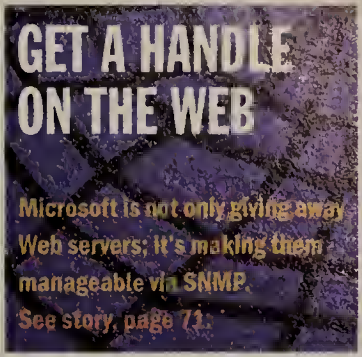
FEBRUARY 12, 1996 VOLUME 13, NUMBER 7

# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



GET A HANDLE ON THE WEB

Microsoft is not only giving away Web servers; it's making them manageable via SNMP.

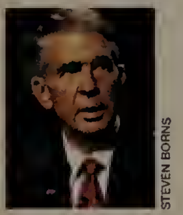
See story, page 71.

# Telecom law releases local-loop floodgates

**By David Rohde**
*Washington, D.C.*

The ink of the president's signature was barely dry on the Telecommunications Act of 1996 when AT&T Chairman Robert Allen publicly demanded that every regional Bell operating company make local services available to AT&T at 25% off the retail price.

Allen said the carrier plans as soon as this summer to enter the local telephone market in all 50 states through resale of RBOC services.



STEVEN BORNS

**AT&T** *Chairman Robert Allen says the carrier will build local networks "on a selective basis."*

Under the new law, RBOCs must negotiate with AT&T and other potential competitors for resale of local exchange services — even though RBOC entry into the long-distance business is subject to a long regulatory approval process.

The other major long-haul carriers have markedly different strategies than AT&T to offer end-to-end telecommunications services, though they have not ruled out resale of local services.

MCI Communications Corp. is seeking a way to speed up its deployment of physical local networks through its MCImetro subsidiary, even going so far as to suggest building local networks jointly with AT&T.

Separately, Sprint Corp. said it will build — via an alliance with

*See* Telecom law, *page 9*

## MORE ON TELECOM REFORM

- The top 11 things to do now. Page 8.
- Are you eligible for new discounts on services? Page 8.
- The law will keep the "poor" FCC's hands full. Page 8.
- Passions run high over law's indecency ban. Page 9.
- Customers speak out on the new law. Page 9.
- Local carriers can't wait to give long-distance service a shot. Page 14.

# Carriers open up their frame relay kimonos

*MCI and Sprint counter AT&T by holding prices steady at tariff deadline.*

**By David Rohde**
*Washington, D.C.*

The last pieces of the Federal Communications Commission's new frame relay puzzle fell into place on schedule last week with tariff filings by MCI Communications Corp. and Sprint Corp.

The mystery is gone. The first-ever frame relay tariffs make it easy to compare prices across carriers, dissect service guarantees and fine-tune networks for cost savings.

Although AT&T raised prices when it filed its frame relay rates two weeks ago, MCI held prices steady and upped the marketing stakes by offering industry-leading data delivery guarantees on its HyperStream service.

The carrier slipped in a 99% frame delivery guarantee on HyperStream permanent virtual

*See* Frame relay, *page 72*

## BINDING PRICES

**Tariffed monthly rates for frame relay service:**

| Feature | MCI HyperStream | Sprint Burst Express |
|---|---|---|
| 56/64K bit/sec ports | $180 | $204 |
| 512K bit/sec ports | $735 | $860 |
| 0 CIR PVC | 3 cents/megabyte* ($7 minimum) | $115 |

* HyperStream's PVCs are for one-way transmission.

SOURCES: MCI AND SPRINT, WASHINGTON, D.C.

**Read about high-speed frame relay plans on Network World Fusion. Select News+ then Front Page.**

NetworkWorld Fusion http://www.nwfusion.com

# Sahara puts Java to management test

**By Tim Greene**
*Cheshire, Conn.*

A start-up that hasn't even released a product could set the pace for what may become one of this year's hottest trends: Java-based management tools.

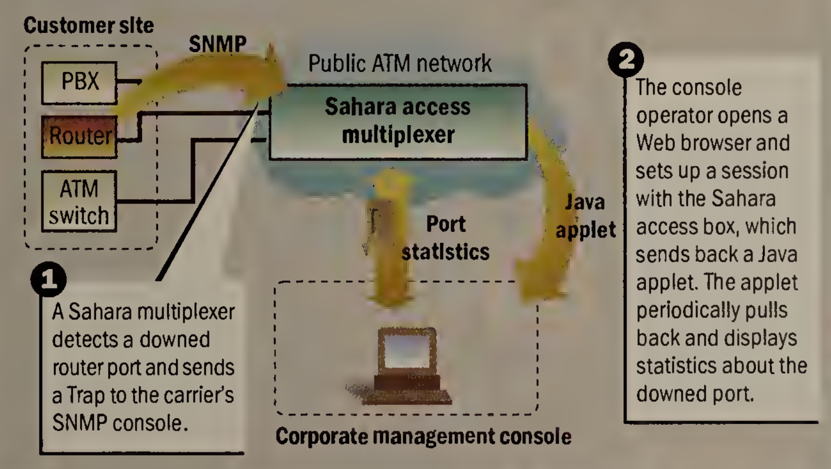
Sahara Networks, Inc. this week will introduce JavaView, the Web-based tool it will use to monitor and help manage its forthcoming Asynchronous Transfer Mode access multiplexers.

But the concept of a Java-enabled management tool could have wider implications. Customers, for example, may someday be able to use such tools for managing devices in their own networks.

*See* Sahara, *page 72*

## JAVA TO THE RESCUE

Sahara Networks' network management scheme.



① A Sahara multiplexer detects a downed router port and sends a Trap to the carrier's SNMP console.

② The console operator opens a Web browser and sets up a session with the Sahara access box, which sends back a Java applet. The applet periodically pulls back and displays statistics about the downed port.

# IBM disconnects rivals

**By Michael Cooney**
*Raleigh, N.C.*

IBM is striking fear into the hearts of rivals with plans to adopt a proprietary method of linking network gear to mainframes.

IBM claims its new MultiPath Channel (MPC) technology will offer a performance boost in linking routers, hubs and other equipment to hosts via mainframe channels. But the company is not saying whether it will license MPC to competing vendors — such as Cisco Systems, Inc., Computer Network Technology Corp. and Cabletron Systems, Inc. — which could fall be-

*See* IBM, *page 73*

In-Site

# Amoco video project gets dose of reality

Amoco's Beering spearheaded the high-resolution conferencing system.

**By Beth Schultz**

A violent storm rages across the Gulf of Mexico, threatening the safety of Amoco Corp. engineers drilling for oil in the roiling waters. In dry, landlocked corporate offices, tensions are riding just as high as executives weigh the possibility of an evacuation.

*See* Amoco, *page 73*

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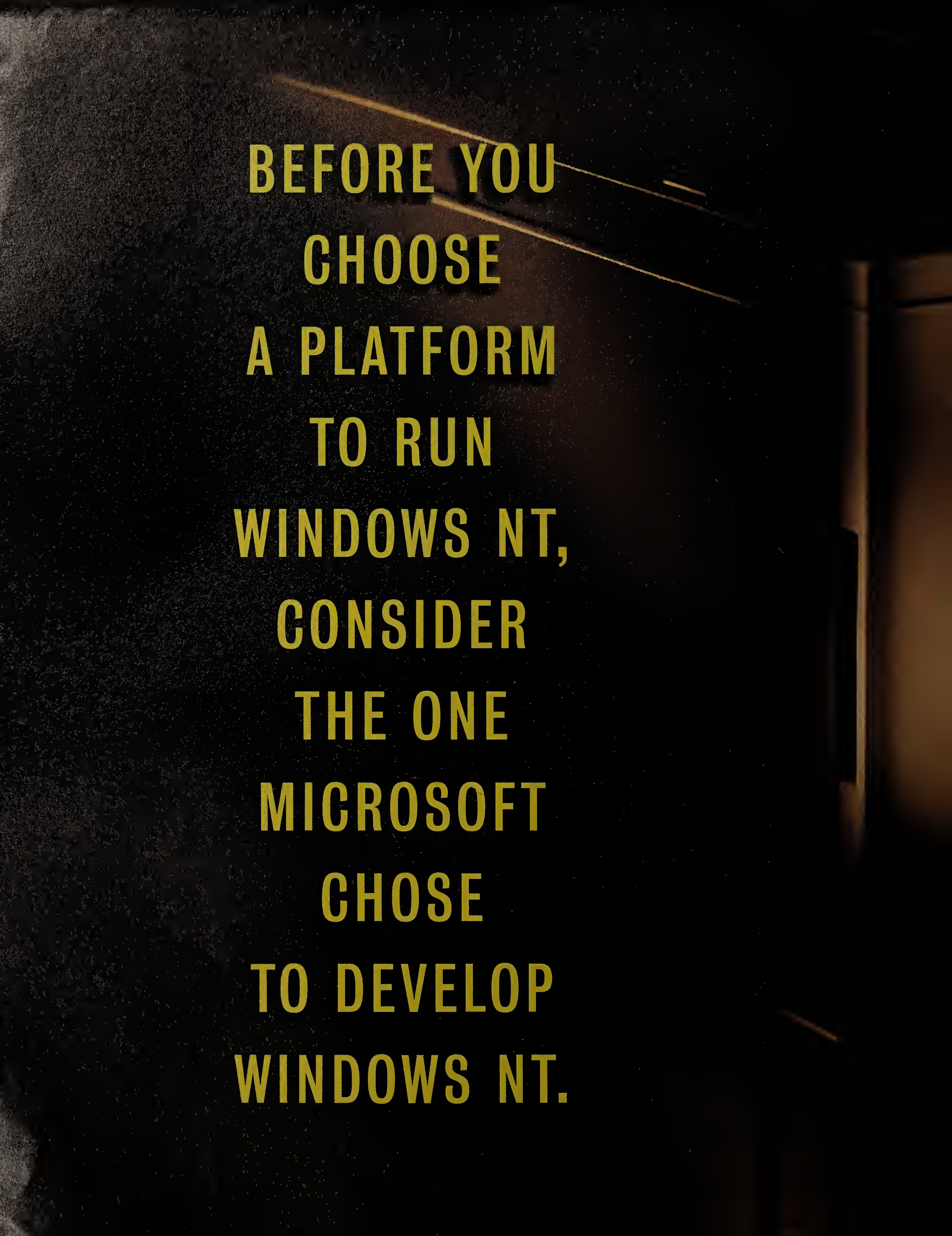
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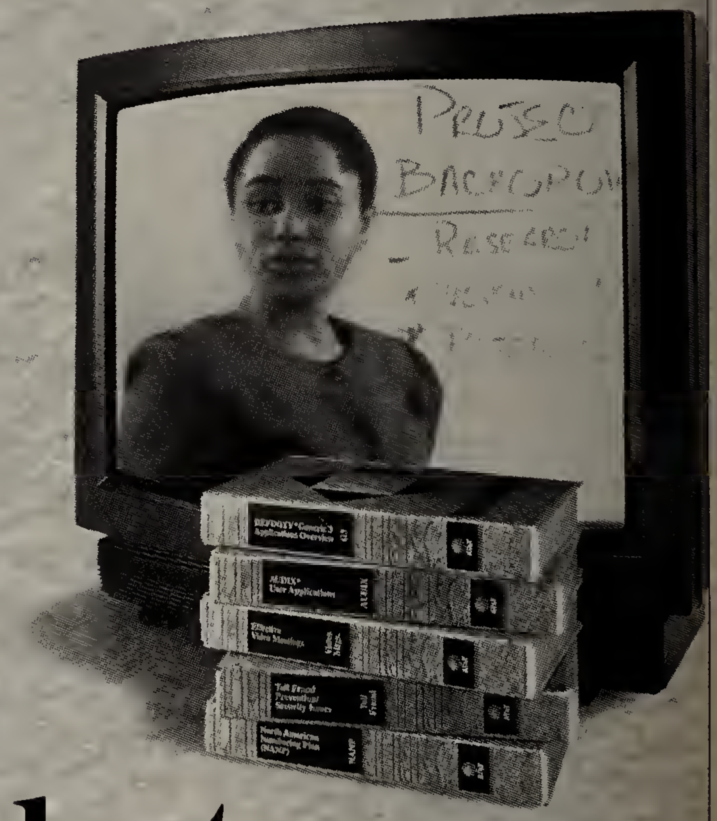

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## NetworkWorld Fusion

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### This Week

### News+

**The Front Page:**

- **On-line censorship:** Read the latest dispatches from the anticensorship campaign and download a paper by a group that wants to censor the 'Net.
- **Sahara:** Brew up some Java apps of your own with downloadable primers and manuals.

**The Technical Sections:**

- **Encryption:** Unlock the secrets of Commercial Key Escrow through articles and links to Internet resources, in Electronic Commerce.
- **SNA:** Don't be a-FRAD. Read articles on linking SNA and frame relay, in WANs & Internetworking.
- **Data warehousing:** Take some demo software out for OLAP, in Client/Server Applications.
- **Management:** Read a Q&A with Tivoli boss Frank Moss and background about Tivoli apps, in WANs & Internetworking.

### Forum

- **Net Results:** Skip MacAskill and Melinda Le Baron go interactive. Read their columns, then let them and other Network World Fusion readers know what you think.

[illegible]

- **Professional Development:** New seminars.
- **DirectConnect:** Download demo software.
- **Network World Central:** Get in touch with us.

### this week's pick

Tick, tick, tick. The year 2000 gets closer every day, and with it, potential nightmares for administrators of networks that still include mainframes based on languages nobody expected to last so long. The Year 2000 Information Center provides links to a variety of articles, vendors and other resources related to the problem, at http://www.year2000.com. And each time you connect, you learn how many years, days and seconds are left until the year 2000.

### HOW TO GET ON TO NETWORK WORLD FUSION

At the welcome screen, click on First Visit and follow the instructions. Subscribers, keep your NWF number – highlighted on the front cover's mailing label – handy during registration. Non-subscribers must fill out an on-line registration form.

## NetworkWorld Fusion

### CONFERENCE PICK

**HOT TOPIC**

**What do you think will be the impact of the telecommunications reform law?**

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**From the main menu, select Forum then nwfusion.talk.**

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### Backspin

**Mitigating vendor topspin**

*Network World is pleased to announce Backspin, a new back-page feature that combines the sharp wit of long-standing columnist* **Mark Gibbs** *with the outspoken news analysis of NW columnist* **David Buerger**. *Together, Gibbs and Buerger should be able to generate enough torque to counteract the forces of the industry's best spin doctors.*

### FEATURES

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**NetworkWorld's** *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

## News briefs, February 12, 1996

### AT&T spin-off's shiny new name

■ The spun-off AT&T communications equipment company last week named itself Lucent Technologies, Inc. and pronounced its desire to compete globally. Executives reportedly considered the name Bell Labs Technologies, Inc., since most of what was AT&T Bell Laboratories will go to the equipment company and, according to one analyst, because "everybody in Europe knows Bell." But the company reportedly feared a legal challenge from the regional Bell operating companies so it settled for putting the Bell Labs name in its new logo.

Lucent Technologies
Bell Labs Innovations

### 'Net purchasing incentive

■ AT&T last week said customers of its WorldNet Internet service can make purchases over the Internet using their AT&T Universal Cards without worrying about fraud. The carrier said it will make good on any unauthorized use of a customer's AT&T Universal Card if the card is compromised while a customer is using WorldNet services. The protection is not subject to the $50 deductible credit card companies typically charge when a card is lost or stolen, the company said.

### Wise GEIS

■ GE Information Services, Inc. (GEIS) last week announced a service that lets businesses tap into the GEIS value-added network from the Internet. The hitch is that customers need to be equipped with encryption software that sets up a confidential communications session and authenticates the user's identity to the GEIS server. The service, called InterBusiness, supports electronic mail and electronic data interchange transactions. Later this year, GEIS is expected to offer flat-rate monthly EDI service charges instead of its current per-kilobyte charges in order to combat desertion to the Internet.

### FTP Software's Web bid

■ FTP Software, Inc. next month plans to ship Esplanade, a World-Wide Web server for Microsoft Corp.'s Windows NT platform. Esplanade will perform dynamic document conversion from 30 formats into the Web standard HTML. In addition, it will have a graphical reporting tool for capacity and trend analysis. The secured version of Esplanade with Secure Sockets Layer encryption will cost $1,195; without encryption, it will cost $445.

### Johnson crosses over to CrossComm

■ CrossComm Corp. last week named William "BJ" Johnson, a 20-year veteran of Digital Equipment Corp., as its new president and chief executive officer. Johnson succeeds CrossComm founder Tad Witkowicz, who will continue as company chairman. Most recently, Johnson was general manager of IBM's Networking Hardware Division.

### Cisco action

■ Cisco Systems, Inc. and Starburst Communications Corp. last week said they will collaborate to extend the scalability of Starburst's multicast File Transfer Protocol. The companies expect their work to be completed in six to 12 months, at which time they will place it in the public domain.

Separately, Cisco renamed the Internet software obtained from the acquisitions of Internet Junction, Inc. and Network Translation, Inc. as CiscoAdvantage. Cisco also announced internally developed CiscoAdvantage software designed to eliminate Web server access delays.

### Andrew to turn on switch

■ Andrew Corp. this week will announce a new token-ring switch aimed at IBM Application System/400 mid-range users. The SwitchLynx will come in four-, eight- and 16-port configurations, supports 4M and 16M bit/sec token-ring cards and boasts 512M bit/sec of throughput via its shared bus architecture. The SwitchLynx is based on IBM's 8272 Token Ring switch. Andrew acts as an OEM for IBM.

# Oracle to unwrap Universal Database

**By Barb Cole**
*Redwood Shores, Calif.*

Oracle is poised to deliver what it is calling a Universal Database — a hybrid server that combines its flagship database with support for multiple data types as well as built-in capabilities for managing distributed databases and Web servers.

While the Universal Database name is new, Oracle over the past year has talked up its strategy for supporting a wider array of data types (*NW,* Sept. 25, 1995, page 47) and getting better management tools to users (*NW,* June 12, 1995, page 10).

### THE PIECES OF ORACLE'S UNIVERSAL SERVER

- ▶ **ConText Option** — for storing text
- ▶ **Spatial Data Option** — for storing spatial data such as maps
- ▶ **Video Option** — for storing full-motion video
- ▶ **Web Option** — for linking databases to Web servers

The foundation of Universal Database, to be announced at Oracle's Developer Conference in San Francisco on Feb. 26, is Oracle7 Release 7.3. The offering is a new version of the company's database server that improves performance of data warehousing and on-line transaction processing applications. It also has optional add-ons that provide support for text, spatial data and video, and comes bundled with Web server software.

Oracle is billing the Universal Database as being capable of managing not only the diverse data types found on corporate nets, but also those out on the World-Wide Web.

Several pieces of the Universal Database, such as the text management and video server components, were available individually from Oracle. They now will be made available across all Oracle7 platforms and accessible via a single query.

Analysts said this integration is important because in attacking the growing Web application market, Oracle needed to provide a way for developers to build applications that access a diverse range of data.

The breadth of data support and the integrated Web software in Universal Database will enable users to build more dynamic Web pages that incorporate both data and video, said Mark Jarvis, vice president of server marketing at Oracle.

Support for objects and user-defined data types is expected in the much-anticipated Oracle8, due in 1997, Jarvis said.

Also key to the release is a suite of built-in management tools dubbed Oracle Enterprise Manager.

In addition to providing basic database monitoring, a job scheduler and a facility for installing software, Oracle will sell add-on components for monitoring its SQL*Net networking software and managing distributed replication sessions and its Mobile Agents remote access software.

The release also will incorporate the company's Secure Network Services encryption software that works with SQL*Net, as well as Oracle Trace and Oracle Expert, performance tuning tools acquired from Oracle's acquisition of Digital Equipment Corp.'s Rdb database line.

**Universal concept**

The universal database server concept is an increasingly popular one. Rival Informix Software, Inc. last week announced Informix Universal Server, a hybrid of its relational database and technology it acquired in the December acquisition of Illustra Information Technologies, Inc.

Sybase, Inc., which has yet to discuss its plans for such a server, is viewed as lagging in this area. "This announcement is going to knock Sybase right off the map," Jarvis said.

Analysts said universal servers will be the basis of the multimedia and Web-based applications of tomorrow, but they questioned whether these servers can deliver adequate performance.

"The big question is how far can you extend database servers and still get good performance?" asked Stan Dolberg, an analyst at Forrester Research, Inc., a Cambridge, Mass., market research firm.

Pricing for the Universal Database was not available. ■

# Drudgery taken out of TCP/IP configuration

**By Michael Cooney**
*Menlo Park, Calif.*

Users can save thousands of dollars in overhead costs when building large TCP/IP nets with new software from Competitive Automation, Inc.

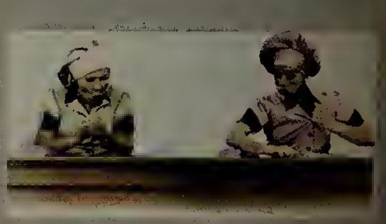
Join is software for Unix servers that automatically assigns IP addresses, configuration parameters and security levels for any devices being added to or moved around on TCP/IP-based enterprises.

The software eliminates manual addressing and other tedious tasks network managers face in controlling their burgeoning TCP/IP nets.

"Adding and moving devices on a large TCP/IP network can entail hours and even days of administrative and manual work-

*See* **TCP/IP,** *page 72*

### CORRECTION



The artwork that ran on page 35 in the Feb. 5 issue failed to receive a credit. The credit should have been attributed to Archive Photos.

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# What you need to do about telecom reform

**By Daniel Briere and Mark Langner**
*Special to NW*

For years, organizations such as yours have been flirting with internal and external changes to the way they deal with telecommunications, but the new law will force you to address some of these issues.

This goes beyond deciding which services to look at or how to solve a particular problem; it involves changes to organizational structure, domain scope and processes. You'll need to start looking across company walls to gain a clear understanding of who has responsibility for what and which budgets get applied to what services.

Here's a sampling of issues you'll need to consider:

■ **Term plans.** Figure out where you stand. You may know where you are relative to the data contracts, but what about access, local loops, equipment, cellular phones, pagers and the like? Typically, these contracts cross a number of groups, and this needs to be consolidated in advance.

■ **The Internet.** Expect Internet providers to soon begin pitching remote-site electronic mail, telephony and videoconferencing services over the 'Net at budget prices and possibly with quality to match. Those buying Internet services today are likely ill-equipped to make decisions on remote access numbers and calling cards. You'll have to play watchdog.

■ **Buy or rent?** The buy vs. rent, PBX vs. Centrex, premises-based Notes application vs. network-based type of decision is going to get tougher, with more providers pitching attractive network-based options. To make sure that you take full advantage, you'll need to get those who make equipment and software purchases in sync with your service buyers.

■ **More sales contacts.** Let's suppose you have three contact people for all the services covered by the telecommunications act, each handling a mix of five services. Now each contact might get 15 sales calls because all carriers can offer each other's services. You need to rethink how you are going to deal with this.

■ **Cellular, paging, PDAs and other mobile wares.** This on-the-road business is going to get more complicated because there are so many people from which you can buy service. Expect more bundling, new options and lower costs — which amounts to more opportunity for you.

■ **Service mix supporting vertical applications.** Consider airlines providing flight status information: They have provided this via toll-free access in the past. But what about wireless options and the Internet? As providers come to you with a broad slate of transmission and service options, you might find that certain applications become more valuable when spread across a number of service options.

■ **Sattelite.** It is no longer a huge effort to put a satellite dish on someone's home. Look for companies that offer satellite broadcast services to start pitching their services as a higher speed and perhaps lower cost replacement for modem-based land-line communications for things like Internet access, remote LAN access and newsfeeds.

■ **Your lawyer.** Everyone specialize,s so make sure your lawyer is up to speed on the ins and outs of the telecommunications law. This is especially important for government agencies, as you can expect even more vendors to be contending government contract awards with the new competitive landscape.

■ **Internal accounting.** As more and more services are lumped together under bulk contracts, you need to make sure that your internal accounting department is going to be able to allocate and divvy up charges correctly. There are opportunities, but also gotchas, in the new environment. The cost might be better, but what about the billing and other flow-through support? As more flat-rate service is provided, allocating costs will become a problem. You need to make sure you have in place options for dealing with such allocations.

■ **Cable TV and newsfeeds.** A lot more firms are bringing in CNN and CNBC for real-time news, and newsfeed subscription services such as Reuters, Associated Press and Bloomberg. Historically, this has been paid for by individual departments. With new interexchange carrier (IXC) direct satellite, wireless cable, broadband telco pipes and Internet-based options for these services, this will become more of a telecommunications decision and less of a departmental one.

■ **The voice/data split.** ATM will stress historical organizational divisions. We're not buying the internal voice/data group convergence yet, if only because the IXCs will not be serious about voice over ATM anytime soon. Still, down the road, the confluence of voice and data, with layers of wireless, satellite and broadband access links applied, will cause you to rethink parts of your organization.

*Briere is president and Langner is director of voice services consulting at TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and mlangner@telechoice.com.* ■

# Universal service: It's not just for POTS anymore

**By David Rohde**
*Washington, D.C.*

Do you work for a nonprofit health care institution, school or library system? Great! In the near future, you may get a discount on advanced data services, and possibly even Internet access.

Don't work for one of these groups? Too bad. Analysts are concerned that the effort to get these groups advanced data services may cost you a few extra bucks. All of this because of Congress' move to dramatically widen a long-standing policy known as "universal service."

**You're favored**

**Who is eligible for automatic access to advanced services defined under universal service:**

- Elementary and secondary schools
- Libraries
- Teaching hospitals
- Medical schools
- Local health departments
- Community mental health centers
- Nonprofit hospitals

SOURCE: TELECOMMUNICATIONS ACT OF 1996

For decades, the Federal Communications Commission has decreed that everyone in the U.S. who wants plain old telephone service (POTS) shall get it through a complex system of subsidies funded by the telephone companies.

But under the new telecommunications law, by May 1997, the FCC must expand the definition of universal service beyond POTS to include "access to advanced telecommunications and information services." Loath to specify exact technologies, Congress said the FCC must redefine universal service to include:

■ Services essential to education, public health or public safety.

■ Services subscribed to by "a substantial majority of residential customers."

■ Services deployed in public networks.

■ Services meeting "the public interest, convenience and necessity."

A quick conclusion is that this checklist refers to cable service, and quite possibly the Internet.

Under the law, universal service subsidies are no longer just for low-income and rural customers. Schools and libraries will be entitled to a direct discount, determined by the FCC, that telephone companies must provide to give those institutions "affordable access" to advanced services. Health care institutions could also get a break as their carriers will get a subsidy for wiring them up.

User representatives look askance at this provision. Washington attorney Colleen Boothby noted that the FCC has for years struggled futilely to find a new way to finance universal service. Without such a plan, the expanded definition could force phone companies to boost rates to provide the new subsidies required.

Several analysts pointed out that the FCC currently might be able to exclude Internet access from the new definition of universal service since only a minority of homes have it. But if the Internet continues to explode, by May 1997, it could find its way into the definition. ■

# Is the FCC up to the job?

**By David Rohde**
*Washington, D.C.*

Both industry players and user representatives have identified one big key to the success of the telecommunications reform law: the ability of the Federal Communications Commission to implement its myriad provisions.

For example, within six months, the FCC is due to draw up the complex regulations to interconnect local exchange carriers' networks with their competitors'. That's just one of the 58 rulemakings it must undertake to fulfill the law's terms.

And when the regional Bell operating companies begin applying to offer long-distance services within their regions, the FCC's workload will grow again.

But the commission is suffering at least a $10 million budget shortfall this year in what Chairman Reed Hundt calls the minimum level of funding it needs — $185.6 million.

Many industry players have a stake in the rulemakings moving along and would like the FCC to get the funds Hundt wants.

"Congress is going to have to face the fact that they've made a major statement about the work they expect to be done at the FCC, and they'd better fund it," AT&T Chairman Robert Allen said.

**Hundt** *says the minimum funding the FCC needs for the telecom law is $185.6 million.*

But morale problems are also plaguing the FCC, particularly at the critical Common Carrier Bureau, according to a prominent attorney here who deals with the agency.

In recent months, the bureau has seen rapid turnover, both from people leaving the agency for private law practice and going to other parts of the agency, the attorney noted.

Although Hundt has attempted to keep up with budget cuts by slashing the number of field offices in half, the FCC has continued to fund what many observers view as marginal activities.

AT&T's Allen echoed other observers when he recommended that the FCC refocus on the most critical issues raised by the telecommunications reform law. ■

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## 1 Industry: (check one only)

01. ☐ Manufacturers (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consultants (Independent)
16. ☐ Carriers/Interconnects
17. ☐ Manufacturers (Computer/Communications)
18. ☐ Resellers of Computer/Network Products (VARs, VADs, Distributors)
19. ☐ Systems/Network Integrators
20. ☐ Distributors (Computer/Communications)
21. ☐ Other *(please specify)*__________

## 2 What is your job function? (check one only)

**NETWORK IS MANAGEMENT:**

1. ☐ Networking Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS, IT, MIS, Systems Management
5. ☐ Engineering Management
6. ☐ Corporate Management (CIO, CEO, Pres., VP, Dir., Mgr., Financial Management)
7. ☐ Consultant (Independent)
8. ☐ Other *(please specify)*__________

## 3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1
7. ☐ None

## 4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. INVOLVEMENT (check all that apply)
1. ☐ Recommend/Specify
2. ☐ Approve
3. ☐ Evaluate
4. ☐ Determine the need
5. ☐ None

## 5 Check ALL that apply in Columns A and B:

**A. I am involved in the purchase of the following products/services:**
**B. I plan to purchase the following products/services:**

A ☐ 100 B ☐ LOCAL-AREA NETWORKS
☐ 01. ☐ Local-Area Networks
☐ 02. ☐ Network Op. Sys. Software
☐ 03. ☐ LAN Storage/Backup
☐ 04. ☐ Optical LAN Storage/Backup
☐ 05. ☐ Disk LAN Storage/Backup
☐ 06. ☐ Tape LAN Storage/Backup
☐ 07. ☐ RAID LAN Storage/Backup
☐ 08. ☐ Network Test/Diagnostic Tools
☐ 09. ☐ Cables, Connectors, Baluns
☐ 10. ☐ UPS
☐ 11. ☐ Network Interface Cards
☐ 12. ☐ Peer-to-Peer LANs
☐ 13. ☐ SNMP Network Management
☐ 14. ☐ ATM Switches
☐ 15. ☐ Token-Ring Switches
☐ 16. ☐ Ethernet Switches
☐ 17. ☐ Remote LAN Access/Communications Servers
☐ 18. ☐ Superservers
☐ 19. ☐ File/Application Servers
☐ 20. ☐ Print Servers

A ☐ 101 B ☐ INTERNETWORKING
☐ 21. ☐ Bridges
☐ 22. ☐ Routers
☐ 23. ☐ Bridge/Router
☐ 24. ☐ Gateways
☐ 25. ☐ Intelligent Hubs/Stackables

A ☐ 102 B ☐ COMPUTERS/PERIPHERALS
☐ 26. ☐ Laptops/Notebooks/Sub-Notebooks
☐ 27. ☐ Micros/PCs
☐ 28. ☐ Minis
☐ 29. ☐ Mainframes
☐ 30. ☐ Workstations
☐ 31. ☐ Terminals
☐ 32. ☐ Printers
☐ 33. ☐ Cluster Controllers
☐ 34. ☐ Monitors
☐ 35. ☐ Fax/Modem Boards

A ☐ 103 B ☐ REMOTE/WIRELESS COMPUTING
☐ 36. ☐ PDAs
☐ 37. ☐ PCMCIA Devices
☐ 38. ☐ Wireless Data Services
☐ 39. ☐ Wireless Data Equipment
☐ 40. ☐ Wireless LANs
☐ 41. ☐ Cellular Equipment & Services

A ☐ 104 B ☐ INTERNET/ELECTRONIC COMMERCE
☐ 42. ☐ Internet Access Providers
☐ 43. ☐ Firewalls
☐ 44. ☐ Web Servers/Browsers
☐ 45. ☐ Internet Software Tools

A ☐ 105 B ☐ SOFTWARE/APPLICATIONS
☐ 46. ☐ Network Management
☐ 47. ☐ Systems Management
☐ 48. ☐ Security
☐ 49. ☐ Communications Software
☐ 50. ☐ Terminal Emulation
☐ 51. ☐ Word Processing
☐ 52. ☐ Operating Systems
☐ 53. ☐ Client/Server Applications Development
☐ 54. ☐ Database Management/RDBMS
☐ 55. ☐ Spreadsheet
☐ 56. ☐ Groupware
☐ 57. ☐ EDI
☐ 58. ☐ E-mail
☐ 59. ☐ Windows/Graphical User Interface
☐ 60. ☐ Multimedia
☐ 61. ☐ Graphics/DTP
☐ 62. ☐ Remote Access
☐ 63. ☐ Imaging
☐ 64. ☐ Suites
☐ 65. ☐ Middleware
☐ 66. ☐ Document Management
☐ 67. ☐ Database Server
☐ 68. ☐ Site Metering Tools
☐ 69. ☐ Computer-Integrated Telephony (CIT)

A ☐ 106 B ☐ WIDE-AREA NETWORK EQUIPMENT & SERVICES
☐ 70. ☐ Frame Relay Equip./Services
☐ 71. ☐ Modems
☐ 72. ☐ FT-1/T-1/T-3 Multiplexers
☐ 73. ☐ FT-1/T-1/T-3 Services
☐ 74. ☐ SONET
☐ 75. ☐ Inverse Multiplexers
☐ 76. ☐ SMDS
☐ 77. ☐ Asynchronous Transfer Mode
☐ 78. ☐ Diagnostic/Test Equipment
☐ 79. ☐ DSU/CSU
☐ 80. ☐ VSAT/Satellite
☐ 81. ☐ ISDN Equipment & Services
☐ 82. ☐ PBXs
☐ 83. ☐ Voice Mail/Response
☐ 84. ☐ Videoconferencing
☐ 85. ☐ Leased Lines
☐ 86. ☐ Switched Data
☐ 87. ☐ E-mail/On-line Services
☐ 88. ☐ 800/900/MTS Services
☐ 89. ☐ Virtual Networks
☐ 90. ☐ Outsourcing/Systems Integration Services
☐ 91. ☐ Education/Training Services

☐ 92. ☐ None of the above (1-91)

## 6 What is the total number of LANs, workstations/nodes at this location/in your organization?

**At this location:**

| | LANs | | Workstations/ Nodes |
|---|---|---|---|
| 1. | ☐ | 5,000+ | ☐ |
| 2. | ☐ | 1,000 - 4,999 | ☐ |
| 3. | ☐ | 100 - 999 | ☐ |
| 4. | ☐ | 50 - 99 | ☐ |
| 5. | ☐ | 10 - 49 | ☐ |
| 6. | ☐ | 1 - 9 | ☐ |

**Entire organization:**

| | LANs | | Workstations/ Nodes |
|---|---|---|---|
| 1. | ☐ | 5,000+ | ☐ |
| 2. | ☐ | 1,000 - 4,999 | ☐ |
| 3. | ☐ | 100 - 999 | ☐ |
| 4. | ☐ | 50 - 99 | ☐ |
| 5. | ☐ | 10 - 49 | ☐ |
| 6. | ☐ | 1 - 9 | ☐ |

## 7 Check ALL that apply in Columns A and B:

**A. The following network platforms are currently installed:**
**B. The following network platforms are planned for purchase:**

A ☐ 55 B ☐ NETWORK ARCHITECTURES
☐ 01. ☐ SNA
☐ 02. ☐ DECnet
☐ 03. ☐ TCP/IP
☐ 04. ☐ Novell IPX/SPX
☐ 05. ☐ APPC/APPN/LU 6.2
☐ 06. ☐ NETBIOS
☐ 07. ☐ AppleTalk
☐ 08. ☐ NFS
☐ 09. ☐ Other *(please specify)*__________

A ☐ 56 B ☐ NETWORK OPERATING SYSTEM
☐ 10. ☐ Microsoft (LAN Manager)
☐ 11. ☐ Novell (NetWare 2.X, 3.X)
☐ 12. ☐ Novell (NetWare 4.X)
☐ 13. ☐ Windows NT
☐ 14. ☐ Windows NT/Advanced Server
☐ 15. ☐ LocalTalk (AppleTalk)
☐ 16. ☐ Banyan (VINES)
☐ 17. ☐ IBM (LAN Server)
☐ 18. ☐ IBM (PC LAN Program)
☐ 19. ☐ Artisoft (LANtastic)
☐ 20. ☐ Digital (Pathworks)
☐ 21. ☐ Other *(please specify)*__________

A ☐ 57 B ☐ LAN ENVIRONMENT
☐ 22. ☐ 4M Token Ring
☐ 23. ☐ 16M Token Ring
☐ 24. ☐ Ethernet
☐ 25. ☐ 100M Ethernet
☐ 26. ☐ StarLAN
☐ 27. ☐ FDDI
☐ 28. ☐ LocalTalk
☐ 29. ☐ 10Base-T
☐ 30. ☐ ATM
☐ 31. ☐ Other *(please specify)*__________

A ☐ 58 B ☐ COMPUTER OPERATING SYSTEM
☐ 32. ☐ DOS
☐ 33. ☐ Unix/Xenix/AIX
☐ 34. ☐ OS/2
☐ 35. ☐ OS/2 Warp
☐ 36. ☐ IBM MVS
☐ 37. ☐ IBM VM
☐ 38. ☐ Digital VMS
☐ 39. ☐ Macintosh
☐ 40. ☐ Windows
☐ 41. ☐ Windows 95
☐ 42. ☐ X Window System
☐ 43. ☐ Solaris
☐ 44. ☐ Other *(please specify)*__________

☐ 45. ☐ None of the above (1-44)

## 8 For which areas outside of North America do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

## 9 Do you have or plan to install client/server networks? ☐ Yes ☐ No

## 10 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

| Mainframes | A – Installed | B – Planned |
|---|---|---|
| 1. IBM | ☐ | ☐ |
| 2. Amdahl | ☐ | ☐ |
| 3. Cray | ☐ | ☐ |
| 4. Hitachi | ☐ | ☐ |
| 5. Unisys | ☐ | ☐ |

| Minis | C – Installed | D – Planned |
|---|---|---|
| 1. IBM | ☐ | ☐ |
| 2. Digital | ☐ | ☐ |
| 3. Tandem | ☐ | ☐ |
| 4. Unisys | ☐ | ☐ |
| 5. AT&T GIS | ☐ | ☐ |
| 6. HP | ☐ | ☐ |
| 7. Data General | ☐ | ☐ |

**Which of the following do you have installed/planned: (USE NUMBERS ONLY)**

| | At this location: | | Entire organization: | |
|---|---|---|---|---|
| | E – Servers | F – Clients/Nodes | G – Servers | H – Clients/Nodes |
| 1. Power PC | | | | |
| 2. Power Macintosh | | | | |
| 3. Macintosh (Other) | | | | |
| 4. Pentium-based | | | | |
| 5. 80486-based | | | | |
| 6. 80386-based | | | | |
| 7. 80286-based | | | | |
| 8. RISC-based workstations | | | | |
| 9. Other | | | | |

## 11 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million or more
02. ☐ $50 million - $99.9 million
03. ☐ $25 million - $49.9 million
04. ☐ $20 million - $24.9 million
05. ☐ $10 million - $19.9 million
06. ☐ $5 million - $9.9 million
07. ☐ $1 million - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $250,000 - $499,999
10. ☐ $249,999 or less
11. ☐ None of the above

## 12 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ $10 billion or more
2. ☐ $1 billion to $9.9 billion
3. ☐ $500 million to $999.9 million
4. ☐ $100 million to $499.9 million
5. ☐ $50 million to $99.9 million
6. ☐ $10 million to $49.9 million
7. ☐ $5 million to $9.9 million
8. ☐ $4.9 million or less
9. ☐ None of the above

## 13 Estimated number of employees at this location/in entire organization:

**At this location:**
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

**Entire organization:**
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

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# Web responds to new ‘indecency’ law

*Pits antiporn groups against free-speech advocates.*

**By Ellen Messmer**
*Washington, D.C.*

An Oklahoma-based group has taken the new Communications Decency Act to heart and is already referring objectionable sites to the government in hopes of prosecution.

Oklahomans for Children and Families (OCAF), which lobbied to pass the provision of the Telecommunications Act of 1996, said Internet service providers (ISP) must immediately stop carrying Usenet newsfeeds with any sexual content or face possible federal prosecution.

While some ISPs are already bowing to these sorts of demands, free-speech activists last week organized protests, turning Web sites black and festooning them with symbolic ribbons.

Although the Web has yet to change dramatically, the Internet community should take the new law seriously: ISPs, individuals or employers that violate the rules face up to two years in jail and a $250,000 fine. Despite this, *Network World* found racy newsgroups and Web sites to be very much in action after the law was enacted.

ON-LINE

**Get more on the battle over the on-line “Indecency” law on Network World Fusion including:**

- **OCAF’s manifesto**
- **Planned legal challenges**
- **New law’s initial impact on the Web**

**Select News+ then Front Page.**

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Maybe this is because the government has yet to explain exactly how it will control the ’Net. Observers, however, expect that the government’s actions will likely be based on the complaints of groups like OCAF. If the government believes it has sufficient cause, it can unleash federal prosecutors. Local and state governments can also act against “indecent” content.

**“The current lawlessness on the Internet has opened a virtual triple-X bookstore in the bedrooms of every child with a computer. I am glad that we’ve come to a successful closing of the ‘peep show’ doors to our youth.”**

*Sen. James Exon (D-Neb.), original author of the Communications Decency Act*

Some sites have heeded the new law and blackened their home pages. The Circlet Press — Erotic Science Fiction & Fantasy site said it “has been censored because of illegal actions by the United States Government.”

And where the Penthouse site had pictures of naked women, they now have one of the following:

- ■ A box that says the picture has been deleted “in accordance with U.S. censorship laws.”
- ■ A picture that has been cropped so all you see is the model’s face and shoulders.
- ■ A picture in which a bikini has been painted over the model’s image.

Meanwhile, the Playboy site is protesting with a blue ribbon.

The American Civil Liberties Union (ACLU), which last week began a court fight to overturn the law as a violation of the constitutional right to free speech, acknowledged OCAF may have been given a sharp blade in the new law.

“It’s an open question under the statute whether ISPs will be held liable for content over which they have no or minimal control,” said ACLU Associate Director Barry Steinhardt. “[The ISPs] can decide to accept certain newsfeeds, but in no way can they monitor every posting of every feed they get.”

OCAF, through its call-to-action manifesto dubbed “The Agincourt Project,” is urging individuals to get local police and federal prosecutors to stop ISPs from carrying several Usenet groups.

For a start, the OCAF is determined to wipe the newsgroup alt.binaries.pictures.erotica off the map, said Bob Anderson, president of the Oklahoma group. The group also objects to Playboy and Penthouse but will not pick a fight with them first off, he added.

**Steinhardt** *says the statute doesn’t answer whether ISPs will be “held liable for content over which they have no or minimal control.”*

Last week, OCAF registered the first ISP to censor newsfeeds — Norman, Okla.-based Telepath Systems, Inc. Telepath dropped the entire .alt newsfeed but started bringing back the sports and hobbies discussion groups once users complained.

“We feel there are certain Usenet newsgroups that break the law,” said David Tingler, president of Telepath.

The Center for Democracy and Technology, the Voters Telecommunications Watch and the Electronic Frontier Foundation last week urged users to either turn their Web sites black or post a blue ribbon in protest for two days.

While many did, including the Yahoo and Lycos Web search sites, the protest drew only a fraction of the 180,000 Web sites in existence.

On its own initiative, Great Neck, N.Y.-based ISP NYSERNet, Inc. has rejected sexually graphic Web content deemed to be exploitative and degrading to women, according to Paulette Poretsky, NYSERNet’s director of marketing.

Corporations also face heightened liabilities under the new law.

“Employers can’t simply look the other way to the possibility that employees will engage in activities that violate the act,” said Barry Weiss, partner in the Chicago-based law firm Gordon & Glickson. “A prudent employer would adopt a policy regarding transmission of indecent material. And there should be a whistle-blower clause so that employees can report violations against a boss and not fear retribution.” ■

# Telecom law

*Continued from page 1*

three cable television companies — local networks based on cable lines and wireless licenses.

And No. 4 carrier LDDS WorldCom sprung right into action following the new law’s signing. It announced a marketing alliance with GTE Corp., the nation’s principal local carrier after the RBOCs.

### Advantages and disadvantages

In emphasizing AT&T’s plans to enter the local telephone market through resale, Allen illustrated both the one big advantage and one big disadvantage that interexchange carriers (IXC) have in aiming for customers’ end-to-end business.

The advantage: Unlike the RBOCs, IXCs tend to have individually negotiated term contracts in place with big corporations. So they can tell these customers that any services they move away from the RBOCs will be eligible for the percentage discounts they already enjoy on the long-distance end.

The disadvantage: Even the largest IXC has little hope of quickly building a nationwide local network on its own, so it must negotiate with RBOCs for interconnection and resale agreements.

“None of the IXCs have the money to put the infrastructure in place on their own,” said Steve Sazegari, principal in the Foster City, Calif., consulting firm TeleMac. “I think all of the carriers will pursue the reseller strategy to one extent or another.”

MCI President Gerald Taylor said MCI would even consider jointly building out local networks with AT&T, but Allen remarked that AT&T would build its own local networks only “on a selective basis.”

He said AT&T would negotiate for at least a 25% discount off the retail price of local service so the carrier can bundle local services with its long-distance offerings and still make a profit while saving customers money.

“The fastest route into the local market is through resale of existing Bell company capacity,” Allen said.

Such a deal would be a far cry from AT&T’s difficult experience in Rochester, N.Y., the site of the nation’s initial experiment in local resale. That project stalled after AT&T won a measly 5% discount in negotiations with Rochester Telephone Co., a unit of Frontier Corp.

The new law requires the RBOCs to offer other carriers a wholesale price for local services based on the retail price minus certain costs that a middleman doesn’t have to spend, such as advertising.

The standard becomes even tougher when the RBOCs win the right to offer long distance within their own region.

At that point, they have to offer local service for resale at a true wholesale cost plus a small profit. ■

### SOMETHING TO SHOOT FOR

**Magic numbers for AT&T as it moves in on local telephone business:**

**25%**
Discount that AT&T needs from RBOCs to resell their services

**7**
New AT&T regional presidents concentrating on local service

**33%**
Percentage of the local market that AT&T expects to have in 5 to 10 years

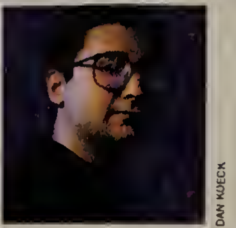
**$90 billion**
Current size of local exchange market

SOURCE: AT&T, BASKING RIDGE, N.J.

### HOW WILL THE TELECOMMUNICATIONS REFORM BILL AFFECT YOUR NETWORK?

*“Everyone is expecting there will be more competition, which will drive down rates. It should also stimulate development of new technology. It’s difficult to pick out a downside to the reform. A lot of people are concerned that additional competition means additional choice, which can breed confusion.”*

**Jeff Speight, chief networking officer, Donaldson, Lufkin & Jenrette, New York**



*“If the new reforms can open up markets for us, I’m all in favor of that. When more companies vie for business, you get more services and better price structure. But the content regulations can force companies to take away communications vehicles. I don’t think these kinds of obscenity rules are really thought out. The industry will police itself.”*

**Rob Kirkey, electronic services manager, Great Plains Software, Fargo, N.D.**

*“It’s going to have a major impact on our state. A lot of businesses will be coming in. The impact on our network will be positive. It means we’ll have a lot more companies purchasing higher speed equipment. The best aspect of the reform is the increased competition.”*

**Jane Patterson, adviser to the Governor’s Office of Policy, Budget and Technology, Raleigh, N.C.**

# HP outlines new management, messaging directions

## *Company plans to unite its network and systems management tools.*

**By Jim Duffy**
*Palo Alto, Calif.*

After three years of hyperbole, Hewlett-Packard Co. last week said it will — once again — deliver an integrated network and systems management platform.

The company announced plans to ship by midyear two OpenView products, dubbed IT/Operations and IT/Administration. Unlike existing HP network and systems management products that run as separate packages on OpenView servers, the offerings will provide integration between systems and network management maps, databases and applications.

IT/Operations and IT/Administration bundle HP's OperationsCenter and AdminCenter systems management products, respectively, with OpenView's Network Node Manager network management platform (*NW*, May 8, 1995, page 1). HP will retire OperationsCenter and AdminCenter as stand-alone offerings.

HP has been claiming that OpenView is an integrated network and systems management (INSM) platform ever since OperationsCenter, which detects and reports system outages, made its debut in 1993. And HP has reiterated those INSM claims annually with slide shows at conferences such as the OpenView Forum user convention.

But all the while, OperationsCenter and AdminCenter essentially ran as applications alongside Network Node Manager.

Analysts, however, downplayed the importance of IT/Operations and IT/Administration given IBM's acquisition of Tivoli Systems, Inc. and HP's upcoming release of Tornado, a distributed version of OpenView (*NW*, Jan. 30, 1995, page 1). They said IBM's SystemView for AIX product and HP's new products are merely placeholders until more significant products result from the Tivoli deal and the Tornado project.

Nonetheless, with IT/Operations, HP said OpenView users can now:

- View an entire IT environment, including the network infrastructure. This will make it easier, for example, to tell if a server problem stems from the machine itself or a network failure.
- Combine network and systems management tools. For instance, Network Node Manager's Zoomer/Panner capability is now available for systems managers so they can blow up any portion of a logical or topological map to get a more detailed view.
- Allocate operator responsibilities. This feature, first offered only to systems managers in OperationsCenter, will now allow network and systems managers to assign specific areas of management responsibility to individual operators.

IT/Administration, meanwhile, does not yet offer this level of integration between AdminCenter, a systems configuration and inventory package, and Network Node Manager; it only makes both products easier and less expensive to order and deploy.

Though seemingly making strides in its INSM strategy, HP's moves were shrugged off by some OpenView users that are impatient for Tornado.

"Certainly, it does not appear to be any major leap forward in terms of product functionality," said Rick Sturm, a member of the technical staff at US WEST Communications, Inc. in Boulder, Colo. "One thing that does seem to be a step in the right direction is the ability to pull the information together from disparate sources and pass it on for alarm correlation."

IT/Operations agents have a new API that allows them to feed event data to other vendors' event correlation engines, such as Seagate Enterprise Management Software, Inc.'s NerveCenter.

Analysts said IT/Operations is a way for HP to boost sales of its systems management wares. Less than 10% of HP's OpenView installed base, for example, uses OperationsCenter, according to Datapro Information Services Group in Delran, N.J.

Pricing for IT/Operations starts at $40,00. It will be available in May.

Pricing for IT/Administration starts at $26,000. It will be available in June.

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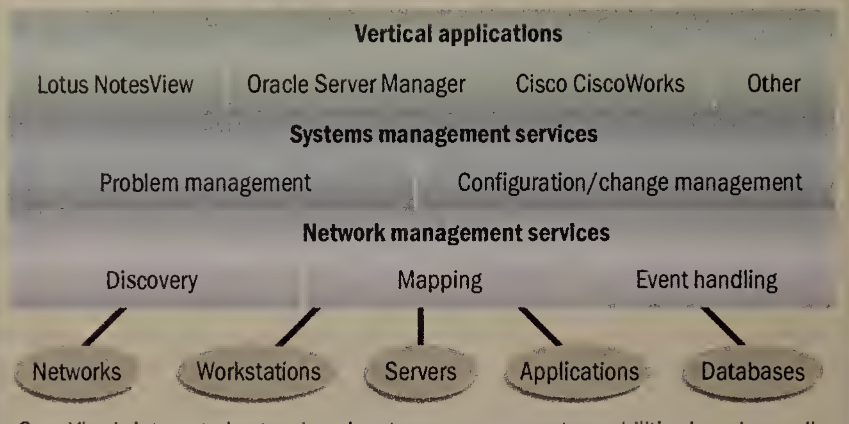
**HP OPENVIEW FRAMEWORK**



OpenView's integrated network and systems management capabilities have been all talk until now. HP plans to combine its systems management and network management software into two new products it plans to ship by midyear.

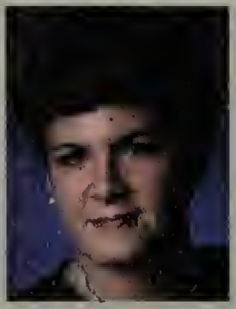
GRAPHIC BY TERRI MITCHELL

## Network World names new publisher

Network World, Inc. last week announced the promotion of Evilee Thibeault to senior vice president and publisher. The management change is part of a larger effort to increase recognition of the *Network World* brand across the industry.

Thibeault, most recently a vice president and associate publisher for the publication, will direct circulation, production, marketing, advertising and sales operations.

Colin Ungaro, *Network World's* publisher for the past 4 1/2 years, will remain in charge of the company and editorial operations as the company's president and chief executive officer.



**Thibeault** *brings 14 years of publishing experience to her new position.*

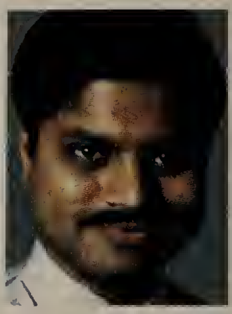
## *HP has more scalable mail servers, lower prices, 'Net links and new clients on the way.*

**By Carol Sliwa**
*Cupertino, Calif.*

Tired of trailing the pack in the groupware/messaging race, Hewlett-Packard Co. officials are plotting a bold '96 strategy that calls for servers scalable to 10,000 concurrent users, desktop price slashes, Internet links and a new groupware-type client.

A series of announcements will be made throughout the year. The first one, scheduled for March, will include server improvements and price cuts. Sources said HP plans to slice the server price to $60 per seat and the mobile/desktop client to $10 per seat.

Company officials would not comment on pricing, but HP appears to be gearing up to compete with Microsoft Corp. and Lotus Development Corp.



**HP's** *Korak Mitra*

Among the Big Three in the groupware/messaging arena, Lotus made a similar strategic move in December, lowering the price of its Notes clients. Novell, Inc. has not followed suit in the price wars. Its five-license client/administration pack still sells for $695. Microsoft's Exchange pricing strategy still is not entirely clear.

"We don't want to be viewed as one of the also-rans, and we want to certainly kick Novell out of third place and take that," said Nigel Upton, an HP worldwide marketing manager. "And then, as far as we're concerned, we are and we want to continue to be No. 1 in the corporate backbone."

Once given up for dead on the desktop, backbone-oriented HP plans to get "much more aggressive in the client business," Upton said.

The groupware client to be rolled out in November will facilitate a wide range of functions, including mail, web browsing, calendaring/scheduling, and conferencing, said Korak Mitra, HP's enterprise messaging operation general manager.

Mitra said the HP client, which is still in the design stage, will not afford users the document management and "fancy" application development capabilities of Notes, or all the "robust" functionality of Novell's GroupWise. But Mitra said he expects it will have more features than Microsoft's Exchange.

HP is working on the next version of its gateway to Lotus Notes and also is doing some Exchange integration, officials confirmed.

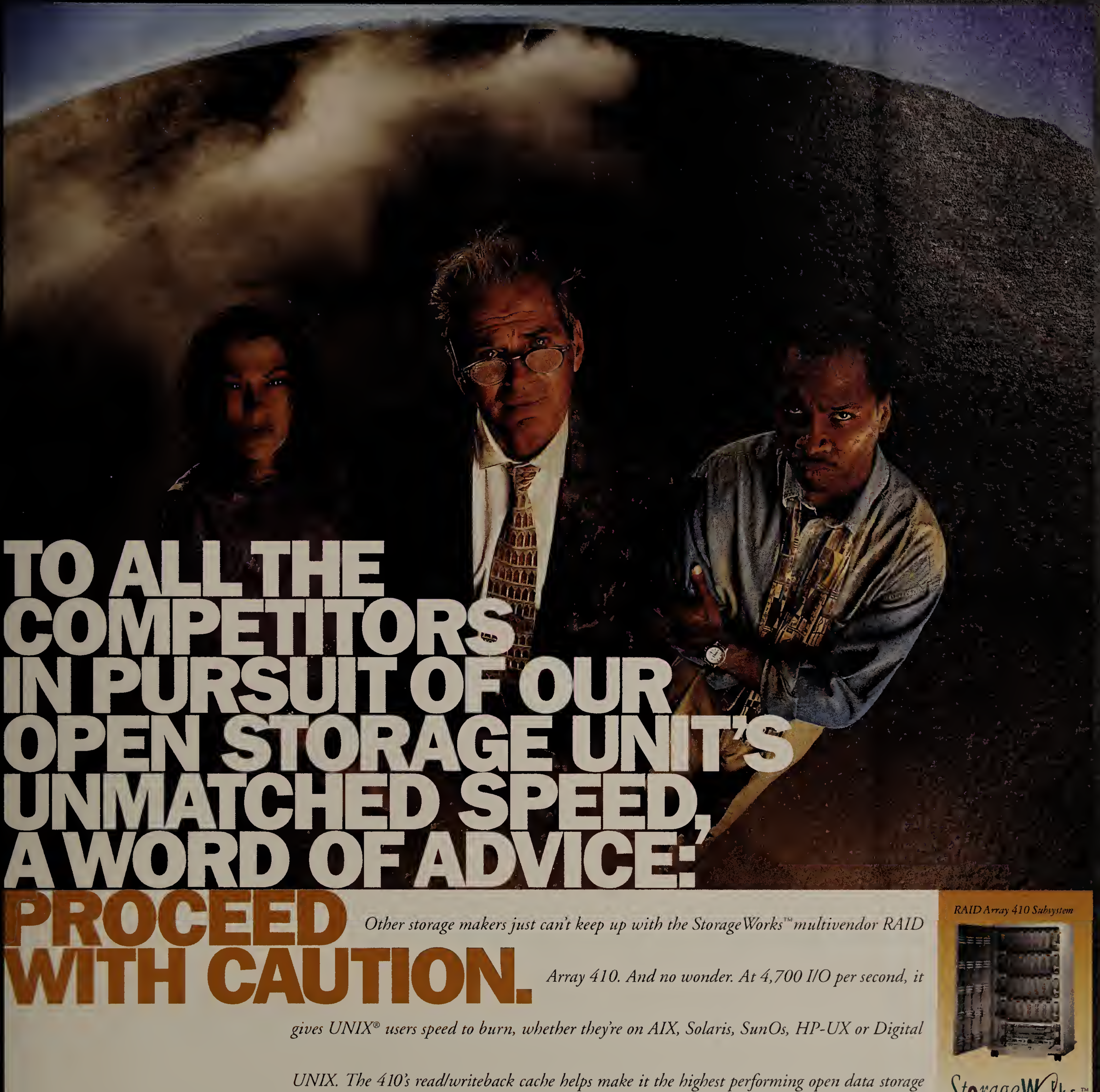
Sources said integration discussions are ongoing with several other vendors, including Novell.

Company officials would not comment on those negotiations, but they did roll out HP's four-pronged strategy for the year, which includes:

- The March announcement of server scalability improvements — doubling the number of concurrent users per server from 5,000 to 10,000 on mid-range machines such as the HP K series and doubling the backup speed — as well as various desktop announcements, including the first implementation of MAPI 1.0 to help customers mix and match clients and servers.
- The June unveiling of a full-functional version of OpenMail developed around NT (*NW*, Nov. 20, 1995, page 1) that will have tight integration with the Exchange Server so no gateway will be needed for the two products to coexist.

Also to be announced in June: an HTML forms-based interface to the OpenMail server that will let users get their electronic mail through any Web browser; support of the Netscape Communications Corp. Navigator mail client through POP3; native Internet address format for OpenMail; and capability for using OpenMail as a transport mechanism for products such as Netscape's Collabra Share.

- An August/September announcement relating to application-to-application messaging. The company will spell out performance tuning improvements it made to guarantee that application communication takes place within a short time period.
- In addition to the release of the groupware client, HP in November will announce integration between OpenMail and the Collabra discussion databases; support for IMAP4 to give users a more robust way to get their mail through a Web browser; the ability for OpenMail to send hot links through Web server addresses; and process management technology developments. ■



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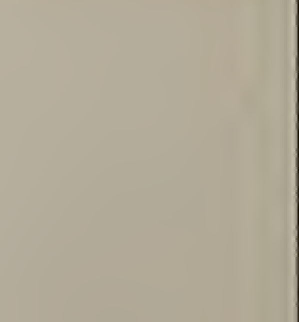

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# Motorola, Cisco rev up remote access gear

**By Jim Duffy**

Motorola, Inc. and Cisco Systems, Inc. have upped the ante in the remote access market.

Motorola last week unveiled a product suite designed to bring remote LAN access, ISDN migration and enhanced management to its dial-up access system.

Separately, Cisco unwrapped the AS5200, first in a line of dial-up access servers that will go head-to-head with Ascend Communications, Inc.'s MAX remote access device.

The companies are vying for the mind share of network managers and Internet service providers (ISP) looking for remote access devices that support analog and digital dial-up lines, dedicated circuit switching, LAN routing and rugged security.

Motorola's wager is its 925 System, essentially a modem pool for dial-in, dial-out remote access applications. Enhancements to the 925 System product line include:

- The 925 LanRover/8E (LR8E) Ethernet LAN access card, which enables the 925 to be configured as a remote access server on an Ethernet LAN. The LR8E is the first product jointly developed by Motorola and Shiva Corp. under a recently announced agreement.
- An enhanced Dual Hybrid Modem (DHM) card and a V.120 software upgrade that enables Motorola's V.34 DHM to be configured as a modem or ISDN device.
- The BitSURFR Central, an ISDN Basic Rate Interface terminal adapter card.
- The 925 NMS, network management software for configuring, controlling, monitoring and testing devices connected to a 925 System.

"Before these enhancements, the 925 was a souped-up modem rack," said Maribel Lopez Howard, data communications analyst at International Data Corp. in Framingham, Mass.

Among the features missing from the 925, however, are ISDN Primary Rate Interface and Multilink PPP (MPPP) support.

Motorola plans to address these shortcomings later this year, said Cindi Branham, Motorola product manager.

**Cisco's MAX-killer**

Cisco's AS5200 is the company's first Universal Access Server for integrated analog and digital dial-up capabilities.

It will compete with products such as Ascend's MAX remote access server, which is considered by analysts to have the lion's share of the ISP market for dial-up remote access applications.

While stopping short of calling it a MAX-killer, as analysts have, Don Listwin, Cisco's Access Business Unit vice president and general manager, said the company will "aggressively launch the AS5200 into the market where the MAX is."

The AS5200 features a 20-MHz Motorola 68030 microprocessing unit, two T-1/E-1 links or ISDN PRIs, and up to 60 V.34 modems supplied by Microcom, Inc. or U.S. Robotics. It also includes an Ethernet attachment and two synchronous serial ports.

Cisco hopes to differentiate its product from Ascend's MAX by enabling its device to aggregate calls among multiple chassis using MPPP, route multiple protocols and support enhanced security and management.

©Motorola: (800) 221-4380; Cisco: (408) 526-4000.

**Remote roundup**

| Company | Product | Price | Availability |
|---|---|---|---|
| Motorola | 925 LanRover/8E | $4,250 | Now |
| | 24-port V.34 Dual Hybrid Modem | $29,995 | March |
| | BitSURFR Central | Starts at $775 | March |
| | 925 NMS | Starts at $2,995 | March |
| Cisco | AS5200 | $37,500 | Q2 |

# SunSoft, HP and SCO move Unix to 64 bits, but does anybody care?

**By Ben Heskett**
*San Francisco*

This week's UniForum will feature a heavy dose of hype about Unix's 64-bit future.

For example:

- SunSoft, Inc. will announce plans to take Solaris, its Unix operating system, to 64 bits while retaining compatibility with current 32-bit Solaris 2.5 applications.
- Hewlett-Packard Co. and The Santa Cruz Operation, Inc. (SCO) will announce their intentions to together build a 64-bit operating system.
- A standards consortium, dubbed Aspen, will announce a set of APIs for the 64-bit Unix environment. The group comprises Unix stalwarts such as HP, SunSoft, SCO, IBM and Digital Equipment Corp.

The Unix market has long been marked by a befuddling array of operating systems, all with slightly different wrinkles. While this new 64-bit API would be a step toward unity among various vendors, the urge to stay apart persists.

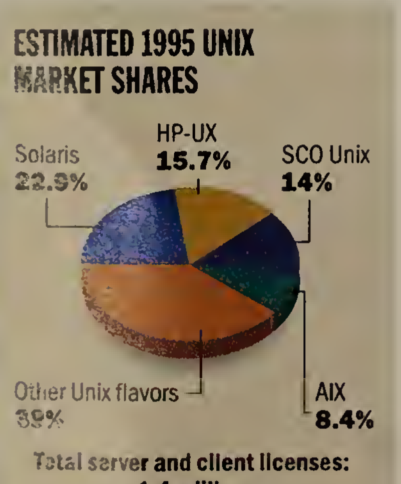
Even if the Unix splintering continues, these 64-bit operating systems will host larger chunks of data in memory, create larger files and work with an increased number of files — all faster than current 32-bit operating systems.

Still, the question remains: Will the 64-bit move mean anything in the marketplace?

Yes and no. With some expecting Microsoft's Windows NT to garner the lion's share of the low and mid-range accounts, Unix operating systems may instead have to fight for the enterprise. Unix is helped here since Microsoft has no immediate plans to take NT to 64 bits.

Some are doubtful Unix can keep up in the workgroup market. "I find [64 bits] to be hardly

*See* **UniForum,** *page 71*



Total server and client licenses: 1.4 million

SOURCE: IDC, FRAMINGHAM, MASS

# AT&T to layer messaging gateways on ANCS

**By Joanie Wexler**

The newly launched AT&T NetWare Connect Service (ANCS) is about to get application-level enhancements, including a set of messaging gateways.

Further down the road, AT&T will add mail hosting, Windows NT services and possibly APIs that allow vendors to use ANCS as a platform to "rent" their applications to users, company officials said.

ANCS is AT&T's IP and IPX routing service, which went commercial in November. It extends NetWare LAN services across the wide area and serves as an outsourced remote access alternative for corporate users and their business partners.

The mail gateways to be layered onto ANCS "in a matter of months," according to an AT&T spokesman, will let ANCS users outsource the care and feeding of servers that convert electronic mail from one format to another so LAN users running different mail systems can communicate.

The initial gateway services will let users of Novell, Inc. GroupWise, Lotus Notes, Message Handling Service (MHS)-based systems and Simple Mail Transfer Protocol systems communicate over the ANCS virtual private data network, as well as across the Internet.

Today, E-mail gateways are often maintained by companies at much effort and expense. At a minimum, "most companies buy an SMTP gateway as an add-on to their messaging system" and use the Internet as their conversion service, said Mark Levitt, senior analyst for electronic messaging at International Data Corp. in Framingham, Mass.

However, if they do not want their messages to traverse the Internet for fear of security breaches, "that's a problem, because encryption standards aren't there yet," he said.

The AT&T service, on the other hand, is considered a comparatively secure net because of the security features inherent in NetWare and the fact that no ANCS routers fall outside the domain of AT&T management.

AT&T also intends to begin hosting mail applications other than Lotus Notes, such as GroupWise, in the ANCS network, according to company officials. This means users would allow AT&T to own and maintain their electronic mail servers instead of doing it themselves.

Further out, AT&T will likely extend the concept of "WANifying" NetWare to support Windows NT services, said Tibor Schonfeld, data and multimedia network services director. The NT platform would become an alternative to NetWare as an ANCS platform for extending NT services to users and their business partners.

In addition, AT&T Bell Laboratories is working on a set of APIs that would allow software vendors wishing to use ANCS as a distribution channel to mount their applications in the ANCS network where they could be downloaded and tried out for a fee, Schonfeld said.

AT&T's role? Earning a commission by providing billing services, he said. ■

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# LECs crash long-haul gate

**By Tim Greene**

Local carriers burst forth last week with a flood of new long-distance options and the promise of lower rates the minute the federal telecommunications bill was signed into law.

Freed to offer service beyond the local area, regional Bell operating companies wasted no time jumping into long distance where they could.

BellSouth Corp., Bell Atlantic/NYNEX Mobile and SBC Communications, Inc. immediately offered cellular long-distance service — one area opened up by the new law.

Apparently trying to capitalize on the moment, GTE Corp. — unaffected by restrictions the law imposes on RBOCs — announced plans to offer wire-based long-distance service this quarter.

NYNEX Corp. and Bell Atlantic Corp. plan to file tariffs right away to offer long-distance service outside their regions on a reseller basis.

Most RBOCs said it will take at least a year before they offer long distance within their regions because they must first live up to the law's requirement that competition exist within the local loop.

Whether local markets are competitive will have to be tested state by state, meaning regional long-distance service will roll out in phases. BellSouth, for example, expects it will take a year to meet requirements in Georgia and Florida, but longer in states where local competition is less evident.

Once given the green light, the RBOCs will try to lock up as much long-distance business within their regions, where markets range in size from a low of $3.5 billion for US WEST, Inc. to $8.5 billion for Ameritech Corp. Financial analysts expect RBOCs to win at least 20% of long-distance business originating in-region.

"Long-distance offerings will be customized to local traffic," said Betsy Bernard, president of Pacific Bell Communications, Inc., the new long-distance group of Pacific Telesis. For example, local carriers could offer special deals for international long distance in areas with large populations of recent immigrants. Interexchange carriers (IXC) with national pricing structures cannot be that flexible.

"That's an advantage that we have, and that's a disadvantage for the national players," Bernard said.

NYNEX plans to seek clusters of users outside its region that generate heavy traffic into NYNEX territory, particularly New York, and try to resell long-distance voice and data services to them. Bell Atlantic is negotiating reseller agreements with IXCs for voice and data services. (NYNEX and Bell Atlantic would not comment on rumors they would merge, which is also permitted under the new law.)

**BIG WINNER?**

**GTE, free to offer long-distance service as soon as it files tariffs, got a jump on the RBOCs last week when it signed a multiyear deal with LDDS WorldCom for long-distance trunks.**

Eventually, RBOCs want to become full-service carriers, beefing up their long-distance data services and offering national and international coverage. They perceive one-stop shopping as an option users want.

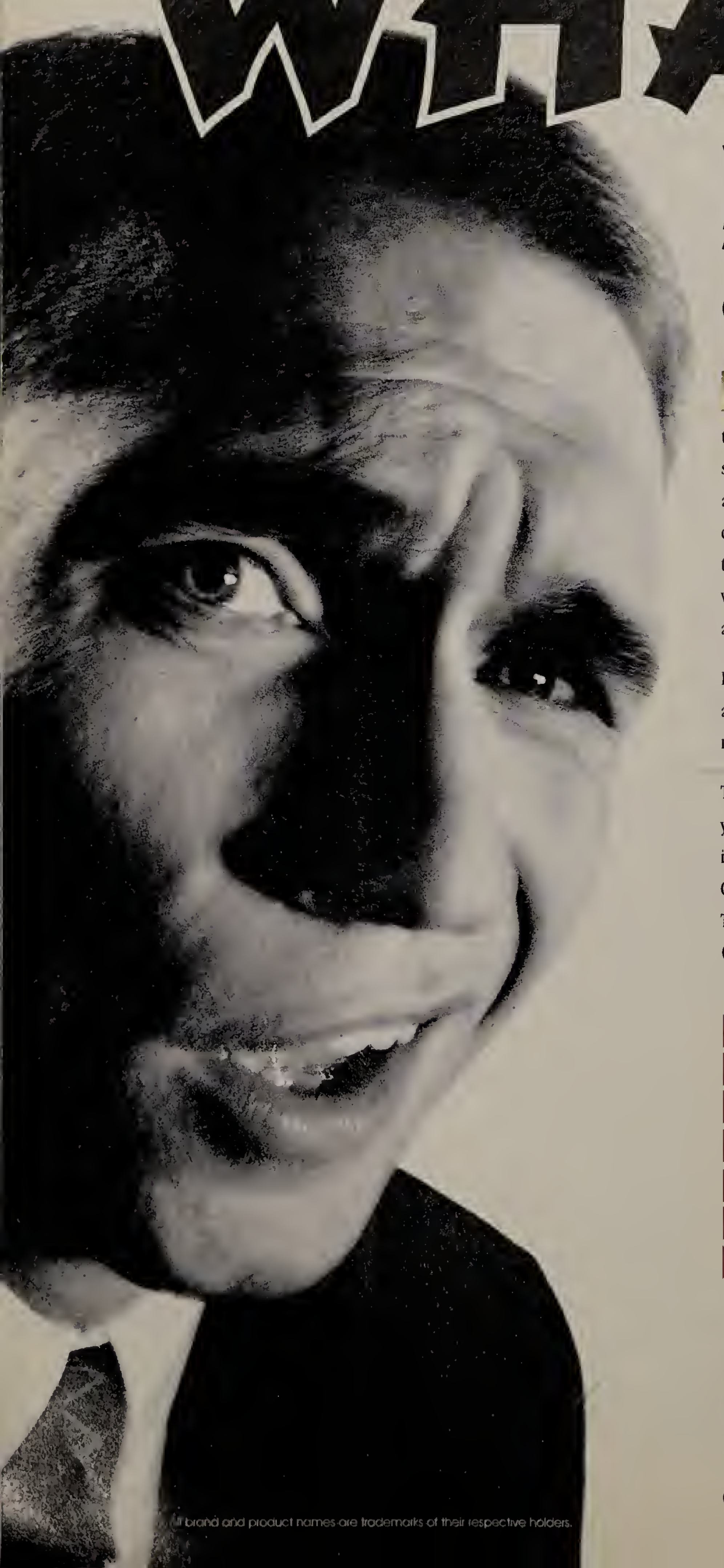
It might take years, but Pacific Bell wants to offer managed, global networking services, Bernard said.

The law also gives IXCs a window during which they can package local and long-distance services while the RBOCs cannot.

Sanjay Mewada, an analyst for The Yankee Group in Boston, said that means IXCs have the chance to cut into RBOCs' local business. Each side will use stall tactics to block the other as long as possible, he predicted.

"This will be tangled up at the [state public utility commission] level and in various courts as each side tries to get leverage out of the law," Mewada said.

Ameritech and US WEST declined to discuss their long-distance plans. ■



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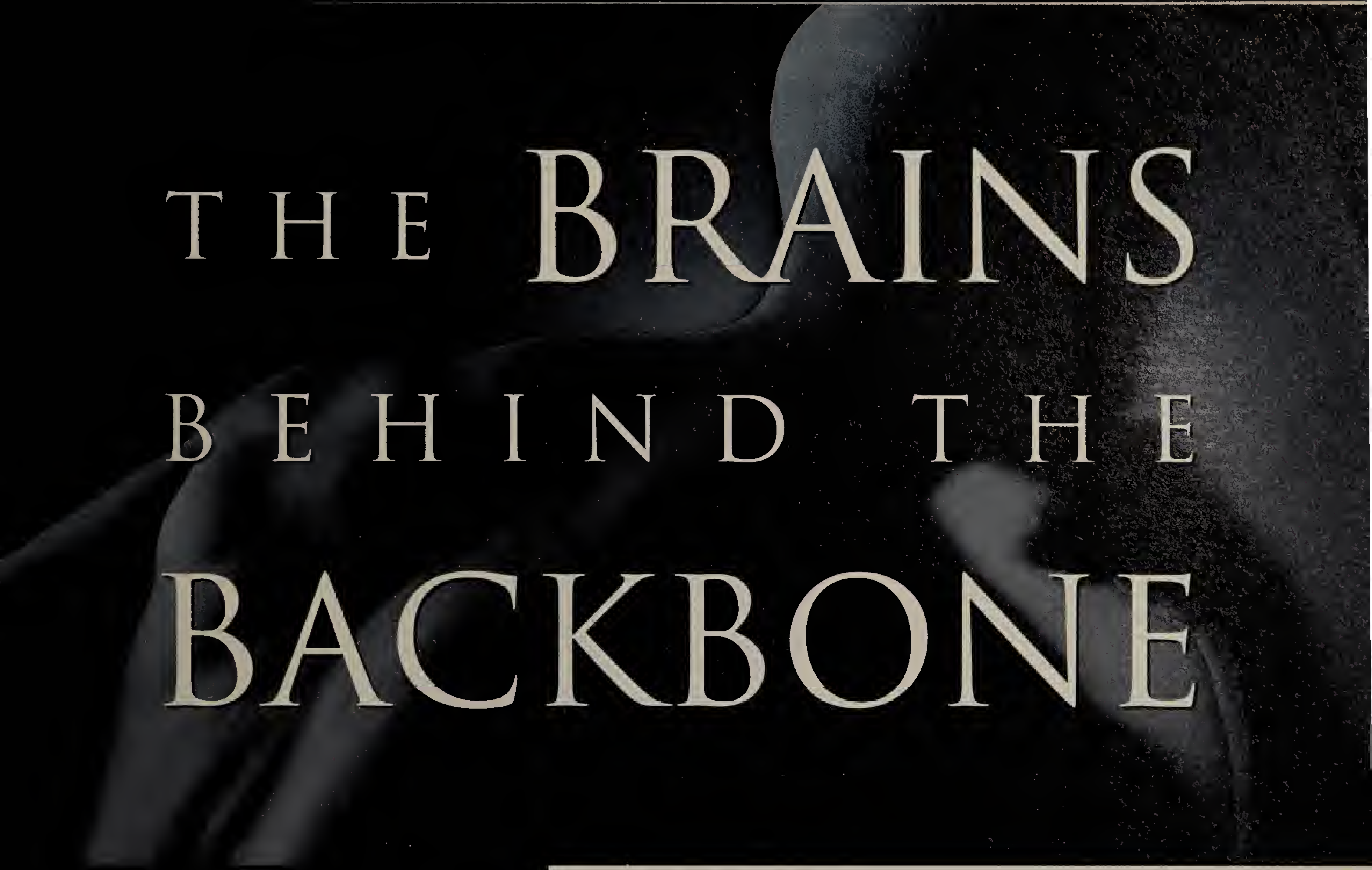

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## Briefs

■ **Cisco Systems, Inc.** *has announced an* **upgrade program** *for users of its 7000 and 7010 series routers. Cisco will offer those users $4,500 to $5,000 for their route and switch processors and software to put toward the purchase of Cisco 7500 integrated route/switch processors and software.*

*Cisco: (408) 526-4000.*

■ **GTE Government Systems Corp.** *and* **Cylink Corp.** *have teamed up to produce InfoGuard 100, an* **Asynchronous Transfer Mode encryptor** *for use over LANs and WANs that is capable of encrypting at up to 34M bit/sec.*

*It also can pass through traffic that does not need to be encrypted with a total throughput as high as 45M bit/sec. InfoGuard 100 will ship in May and is priced at $49,950.*

*Cylink: (800) 533-3958.*

■ **Hypercom, Inc.** *last week announced a low-cost, entry-level* **frame relay access device** *for integrating SNA-based branch offices onto frame relay backbones. The Integrated Enterprise Network (IEN) Model 500 supports two WAN links at speeds up to 64K bit/sec and two local ports, which can be Ethernet or serial protocol such as Synchronous Data Link Control. Token ring is not supported.*

*The IEN Model 500 will be available in the second quarter starting at $1,000.*

*Hypercom: (602) 866-5399.*

## IDEA touts SNA/frame relay access

**By Michael Cooney**
*Billerica, Mass.*

IDEA this week will make its first foray into the SNA/frame relay access fray with new software and hardware components for its Concert family of controllers.

The products will enable users to easily deploy new or existing Concert controllers in a multiprotocol frame relay net with features that guarantee delivery of mixed LAN and SNA traffic from remote branch offices.

**Read more about FRADs on Network World Fusion (http://www.nwfusion.com). Select News+ then WANs & Internetworking.**

The company's new frame relay support will come in two forms: software for the Concert controller family and a standalone frame relay access device (FRAD).

"Frame relay can give existing SNA-based branch office users a 50% reduction in line costs and up to a fivefold increase in bandwidth. And since many of our controllers are already in those environments, we can get users to frame quickly," said Rohit Mehra, product manager for IDEA's networking systems division.

There will be a gradual rollout of IDEA frame relay products

*See* **IDEA**, *page 20*

## Bellcore is looking for work

**By Tim Greene**
*Washington, D.C.*

Users can now hire the considerable networking experience of Bell Communications Research for advice about setting up, maintaining and securing their enterprise networks.

Once relying on the Baby Bells for most of its business, the company is aggressively marketing new services, especially as it prepares to be sold.

The first two entries — enterprise network consulting and a certification program for equipment and services — were recently announced at ComNet '96.

Now known more as a software and consulting company, Bellcore's Enterprise Networks Professional Services will analyze users' needs and design networks accordingly, said Carol Patterson, Bellcore vice president of enterprise markets. These nets can have "anything to do with enterprise networking," she added.

For the past year, Bellcore has been targeting selected companies with a direct mail campaign, Patterson said.

The service also would offer disaster planning, call-center management consulting and advice on electronic commerce, as well as help users beef up their network security.

For example, the company could send out its Tiger Team to try to infiltrate a customer's network any way it can: electronically, by tricking information out of employees over the phone or by searching through the trash for information. If it manages to break in, the team will teach the customer how to prevent it from

*See* **Bellcore**, *page 22*

### AT&T paves new roads to InterSpan

**AT&T recently announced new dial access options for its InterSpan frame relay network — a natural response to a more mobile and far-flung workforce.**

| **Dial-up method** | Analog | ISDN | Wireless |
|---|---|---|---|
| **Options as of year-end 1995** | 14.4K bit/sec through X.25 network via 800 or 950 toll-free services | BRI | None |
| **Recently announced (expected release)** | 28.8K (Q2) | ▶ Short-term PVCs (Q3)<br>▶ Dial backup (Q3)<br>▶ Multirate ISDN (Q4) | ▶ Circuit-switched cellular (Q4)<br>▶ CDPD (Q1) |

## Sprint's configuration mgmt. tool gets a boost

*Competitor MCI preps Vnet enhancement to ServiceView.*

**By David Rohde**
*Washington, D.C.*

Sprint Corp. this year is rolling out a series of management tools that allow users to peer into their carrier network and change private-line, packet-data and voice-network configurations.

The enhancements to Sprint's Insite family of network management products, announced at the recent ComNet '96 show here, illustrate the efforts of long-distance carriers to move configuration management tools to more graphical platforms. Most systems have been running on more awkward text-based architectures.

The lineup starts with Insite Executive, a management suite for large users that requires a Unix-based workstation. Insite Executive software runs on customer-supplied hardware or on a Sprint-supplied Reduced Instruction Set Computing-based unit dubbed the SprintStation.

The system typically requires a 56K bit/sec dedicated link to the carrier network, plus a separate 28.8K bit/sec modem to capture call detail reports and a separate router, according to Bill Branch, Sprint's director of advanced network services.

Since Sprint also is charging separately for individual features such as bandwidth on demand — the ability to order larger or smaller fractions of a T-1 pipe on Sprint's Clearline private lines — the overall cost can be expensive (see graphic).

Using Insite Executive, network managers can perform fault management to pinpoint the location of a fault, whether it is within customer premises equipment, a local access provider or any device on Sprint's network.

A configuration management applet allows users to change relationships between originating and terminating locations without placing specific service orders to the carrier.

And a performance management application measures the delivery of data packets across the carrier network. This is particularly important for Sprint's Burst Express frame relay customers, whose contracts typically guarantee 98% or greater delivery of frames to compensate for a committed information rate — or prespecified data throughput — of 0 bit/sec.

Insite Executive applets are

*See* **Sprint**, *page 22*

### Reconfigure your carrier services. . . for a price

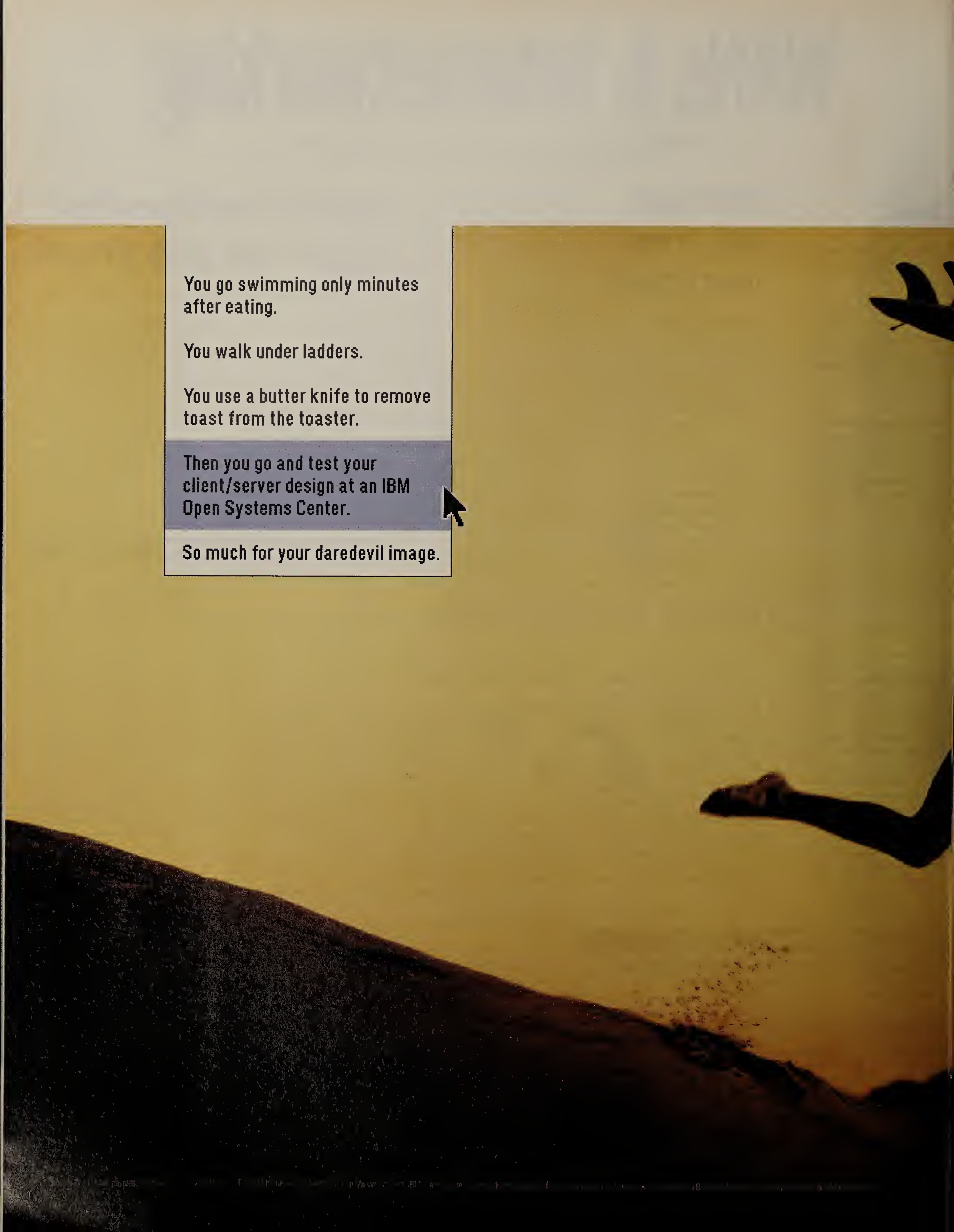
**Cost of Sprint's Insite Executive:**

| Feature | Installation cost | Monthly charge |
|---|---|---|
| Software | $2,500 | $1,600 |
| SprintStation hardware lease | $750 | $1,300 |
| 28.8K bit/sec modem | $400 | None |
| Router lease | $700 | $537 |
| Alarm surveillance | None | $250 |
| Bandwidth-on-demand | None | $900 |
| Call detail records | None | $550 |
| Customer-specified routing | None | $2,700 |
| Diagnostics | None | $400 |
| Disaster recovery | None | $2,000 |
| Extended superframe monitoring | None | $250 |
| Frame monitoring | None | $250 |
| Operational measurements | None | $600 |

Certain features have additional event charges, such as per-minute, per-report or per-transaction costs.

GRAPHIC BY TERRI MITCHELL

SOURCE: SPRINT, KANSAS CITY, MO.



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# Seagate, HP upgrade net mgmt. wares

**By Jim Duffy**

Determining a cause and effect relationship between disparate devices in a network has long been an IS challenge. But now two network management vendors have rolled out products that address this problem.

Seagate Enterprise Management Software, Inc. unveiled a new version of its popular NerveCenter event correlator that lets users pinpoint the root cause of problems among network devices, Unix systems, Windows NT and Novell, Inc. NetWare servers.

Also, Hewlett-Packard Co. unwrapped software that melds its internetwork and performance management packages to help users monitor network service levels.

With NerveCenter Pro, events from multiple devices can now be correlated into a single alarm message to pinpoint problems that previously required operator analysis, according to Seagate. In the case of a server with an IP or IPX stack, the status of each stack can be correlated and an automatic notification sent to any HP OpenView console to indicate which stack is down or whether the server itself has a problem.

NerveCenter Pro costs $15,000 for an enterprise license and will ship in March.

HP, meanwhile, has extended two of its NetMetrix applications, Internetwork Response Manager and Internetwork Response Agent.

They now provide network response time information to HP's MeasureWare agents, which collect system, database and application transaction performance statistics from networked systems.

With this integration, OpenView users running HP's PerfView Analyzer performance monitoring application can now view response-time metrics from network system, application and database components. This should allow managers to more accurately locate the source of problems impacting network service levels in client/server environments, HP said.

"The integration is really a first step in bringing the two together so you can look at an overall service metric and compare that not only to what's happening on the network, but also to what's happening on the nodes attached to the network," said HP user Ron Welf, senior technical lead at Charles Schwab & Company, Inc. in San Francisco.

The Internetwork Response Manager and agent are priced at $3,995 and $495, respectively. They will be available in April. The PerfView Analyzer application and MeasureWare agent are priced at $8,000 and $2,000, respectively. They are available now.

©Seagate: (408) 342-4500; HP: (800) 452-4844.

# Paging service helps out callers

*AT&T's new release puts subscribers on the right conferencing bridge.*

**By David Rohde**

*Washington, D.C.*

AT&T recently introduced an advanced 800 paging service that allows a caller to camp out on a conferencing bridge while it pages the subscriber. Once paged, the subscriber can decide whether to find a phone to take the call.

AT&T's new Personal Reach Service could prove useful to mobile professionals who want to be reachable at all times, analysts said. But they expressed disappointment that AT&T is launching a new wireless follow-me service rather than integrating it with existing, related services.

The jumble of AT&T services — which also includes True Reach 500 and True Ties 800 — is keeping AT&T from building a more scalable platform with lower prices, said Christopher Landes, a consultant with TeleChoice, Inc. in Verona, N.J.

Under Personal Reach, which has been in development for several months (*NW*, Nov. 13, 1995, page 6), each subscriber receives a pager and either a shared 800 number plus a personal identification number or a unique 800 number.

### AT&T'S PERSONAL REACH SERVICE PRICING

Per month, each subscriber: $35

Per minute: $0.25

A pager is included in the service.

SOURCE: AT&T, BEDMINSTER, N.J.

Frequent callers, such as members of a workgroup, select identifying codes that can be as long as their own telephone numbers or as short as a single digit. When these callers dial the subscriber, they enter their codes, which appear on the pager within 20 to 30 seconds.

Infrequent callers who do not have a prearranged identifying code are prompted to press the pound key, which activates the 800 network's inherent ability to deliver the caller's phone number to the pager.

The subscriber then has about 70 seconds to locate a phone and dial a different 800 number to enter the conference bridge. If the subscriber lets the call go or cannot find a phone in time, the caller is transferred to a voice mailbox or secretary.

Under a controlled introduction, the carrier is seeking to sign up departments of up to 25 people until the service becomes generally available in the second half of the year, said David Weiss, AT&T offer manager. The network platform is currently limited to 10,000 customers, he said.

"If this were rolled into a [negotiated] business account, it would take off," Landes said. ■

Advertisement

ATM adapter performance: What do the numbers really mean?

By George Prodan

ATM adapter vendors often tout high throughput numbers to impress end users, only to disappoint them later when products don't perform as advertised. Users should review all the performance claims, examining not only competitive benchmark numbers, but standards-based benchmark numbers and real-world performance numbers, too.

Competitive Benchmarks

These benchmark numbers are an "apples-to-apples" comparison of competing designs—results achieved in laboratory conditions. Vendors using the same benchmark parameters should achieve ratings within 5% of each other. Vendors who fall short by more than 10% from the top performer probably have flawed designs.

But competitive benchmark tests can also be misleading. They usually focus on transmit-only performance numbers—from memory to memory, as opposed to bi-directional—transmit and receive simultaneously. Also, vendors may increase the frame size, using 9000-byte frames to make performance numbers look better. But frames this long aren't usually found in real-world networks.

Standards-Based Benchmarks

Instead, look for standards-based benchmark numbers which typically use the 1516-byte, ATM forum-compliant, Ethernet LAN Emulation frame. This more accurately simulates an Ethernet-attached host communicating with an ATM-attached server or workstation through a Forum-compliant ATM access device. A 9000-byte frame doesn't comply with the Ethernet LAN Emulation specification.

Real-World Performance

Finally, look at real-world performance, where an actual network is tested using a minimum of two hosts connected to an ATM switch running Ethernet LAN Emulation and UNI 3.0/3.1 signaling. The network should simulate a representative traffic load of end users, about 30 to 40 users, with bi-directional traffic.

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Bi-directional traffic should reflect a balanced traffic load—50% in each direction. This is the worst-case condition, where the combination of device driver and adapter hardware must generate interrupts to the host while both transmitting and receiving data.

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Circle Reader Service #36

# IDEA

*Continued from page 17*

over the next six to nine months, Mehra said, with the first being a hardware/software module for the Concert controller. The module, Version 3.2 of the controller's software, is available now and adds the IETF RFC 1490-compliant frame relay support to existing controllers.

RFC 1490 defines how multiprotocol traffic flows through a frame relay network.

Each module can support two wide-area ports running at speeds up to 2M bit/sec. The Concert controller could be expanded to support as many as eight WAN ports if necessary, according to Mehra. Locally, the module can support a mix of Ethernet, token-ring, Synchronous Data Link Control or X.25 links, and a variety of LAN protocols such as TCP/IP and IPX.

**IDEA's** *Rohi Mehra says frame relay can result in a "50% reduction in line costs."*

The box also supports frame relay connectivity to the IBM Application System/400 mid-range via twinaxial and ASCII features.

While Version 3.2 will bring basic frame relay connectivity support to the Concert family, a second release, Version 4.1, will add protocol prioritization features. These functions will ensure that response time-sensitive SNA traffic in a mixed LAN environment continues to flow. Version 4.1 will be available in the third quarter.

The third part of the IDEA rollout will be the company's first FRAD, called the FrameServer.

The stand-alone FrameServer will be RFC 1490-compliant and support two WAN links at speeds up to 2M bit/sec. Eight other ports are available to support a mix of LAN or serial interfaces. It also will support the SNA physical unit concentration features found in the Concert box.

FrameServer will be available around April. Pricing has not been set.

©IDEA: (800) 257-5027.

**WAN MONITOR**

# MCI, Microsoft and the Industrial-Strength Internet

When people around the world think about the information superhighway, many assume that today's Internet will be tomorrow's platform for widespread Internet-based electronic commerce.

It probably won't.

There is a huge chasm between what is needed to support widespread business applications over the Internet and what is provided today. What we need is a new Industrial-Strength Internet (ISI). While it is unclear which companies will take the lead in creating this ISI, the alliance of MCI and Microsoft offers one possibility, and the partnership between AT&T and BBN Planet another.

**Daniel Briere and Christine Heckart**

Today's Internet was never designed for business applications or electronic commerce. Putting tomorrow's vision of the 'Net on today's infrastructure would be like putting MCI's headquarters in a mud-and-thatch hut on top of the San Andreas Fault. Sooner or later, it's bound to come tumbling down. Most providers are not even equipped with the necessary operations, billing and maintenance infrastructure to make the upgrade.

The Internet is not predictable, reliable or mature enough to support the next generation of business applications that want to make use of it.

An ISI is needed. This 'Net must deliver bandwidth or service guarantees, advanced billing options, better security, end-to-end troubleshooting capabilities and high reliability.

The alignment between MCI and Microsoft could foster an ISI solution. MCI brings the network, billing system, support infrastructure and some content; Microsoft brings the software and some content. If the companies turn their combined attention to creating a new Internet for business applications, the information superhighway could become more than just a pipe dream.

A whole new world of network+content possibilities emerge, changing the way business is conducted. Instead of companies building enterprise networks, they may instead buy a software package that includes worldwide interconnectivity. And instead of licensing software once a year, a small fee might be incurred each time a current version is downloaded.

Tomorrow's ISI may include a large number of industry-specific trader networks that provide applications designed to allow that industry to buy and sell its services in an electronic multimedia environment. Connectivity between this closed user group and the larger ISI could be the vehicle for getting the final product to the retailers and consumers.

Isn't this everything the Internet pundits are promising today, for free? That's the promise. But remember: Since the large Internet service providers are still losing money, the current model cannot continue for long. The carriers may be in a better position to make the promise a reality.

MCI and Microsoft may help create an ISI. Yet partnering with Microsoft is like taking the tiger by the tail. If the partnership is too successful, MCI could find that this relationship turns into a full-fledged wedding—with MCI as the cake.

*Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at danny_briere@telechoice.com or christine_heckart@telechoice.com.*

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# LDDS WorldCom revamps pricing for frame relay

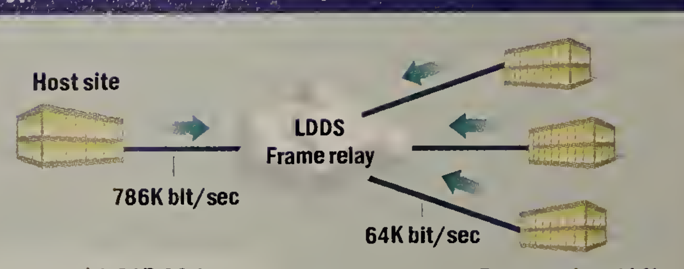
**By Joanie Wexler**

*Tulsa, Okla.*

LDDS WorldCom has just dismantled its unique frame relay pricing scheme — a move that could ease price calculations but discourage some customers from building bigger networks.

A Federal Communications Commission mandate set down in October requires all common carriers to file tariffs as of Feb. 5 for their frame relay offerings. Frame relay has been deemed a basic, rather than enhanced, service.

**A typical network at new LDDS prices**



Port costs: **$1,015.20/mo.**
64K bit/sec PVC to each of 14 sites: $53 each = **$742/mo.**

Total charges: **$5,195.20/mo.**

**Remote sites (14)**

Port costs: **$2,696.00/mo.**
64K bit/sec PVC from each of 14 sites to host site: $53 each = **$742/mo.**

LDDS WorldCom's frame relay pricing is based on price per port and permanent virtual circuit. Previously, the carrier offered a fixed price per port and the total PVC capacity associated with it.

LDDS WorldCom's tariffs change its 5-year-old pricing structure to make figuring costs and comparing them with competitors' prices more straightforward, said David Natho, LDDS WorldCom data product manager. Unlike AT&T's tariffs, which hike prices an average of 6%, LDDS WorldCom's filing cuts the carrier's base rates by about 30% (*NW,* Jan. 29, page 1). However, the tariff eliminates an aggressive discount schedule that has been an incentive for customers to add more permanent virtual circuits (PVC) per port and build larger meshed networks, noted Christine Heckart, senior broadband consultant at TeleChoice, Inc., a consultancy in Verona, N.J.

The carrier has done away with its nonlinear pricing scheme under which the cost per PVC drops as customers add more PVCs per port.

By adding up list prices for ports and PVCs throughout the network each month (see graphic), LDDS WorldCom is now more in line with the Big Three long-distance companies. In the past, Natho said, LDDS WorldCom "didn't look good" in pricing comparisons that did not take the carrier's discount component into account.

The nonlinear structure has made LDDS WorldCom — along with AT&T, which lowered its PVC rates last April — among the low-priced bidders for highly meshed networks. MCI Communications Corp., which offers a usage-based option, and Sprint Corp., with its zero committed information rate option, often come out on top in star-configured nets, Heckart said.

Some customers are apathetic about how the calculations are made.

"I don't care about pricing gimmicks or how easy the prices are to calculate," said Jim Fey, director of strategic technology at LDDS WorldCom shop PMI Mortgage Insurance Co. in San Francisco. "I just want to know how much each site will cost each month. And I expect them to do the math."

LDDS WorldCom's new cost structure also will parallel the way LDDS WorldCom prices its Asynchronous Transfer Mode services. That should help customers when the carrier rolls out frame relay-to-ATM service interworking in March, Natho said.

LDDS WorldCom will likely implement a usage-based option at some point, Natho said. Usage-based billing will be necessary to support ATM switched virtual circuits (SVC), given that customers will not have to predefine the sites to which they will link.

Natho anticipates ATM SVCs coming out in the second half of this year or in early 1997. Frame relay SVCs should follow in one or two quarters, he said.■

## Bellcore

*Continued from page 17*

happening again.

Bellcore will analyze and design, but not actually implement, the plans they draw up. "We're not smart hands. We don't pull the wires, but we can tell you what kinds of wire to use," Patterson said.

In addition, the group could train users for specific skills like it once did for the regional Bell operating companies.

### The Bellcore Mark

Bellcore also is starting a certification program under which it will test services and equipment to check whether they meet its standards. If they do, Bellcore will award them the Bellcore Mark, which is intended to assure users that products live up to their claims.

When the program starts March 1, it will evaluate capability performance of ISDN lines and frame relay, and whether routers offer equal access to all traffic. It also will test whether products meet environmental standards such as fire safety. Later, it will certify Asynchronous Transfer Mode services and whether certain data communications equipment meets interoperability standards.

The mark should give users the confidence to buy new products, according to Mike Farabelli, Bellcore vice president of marketing. It also will mean vendors can demand more for them, he said.

The price for certifying would range from $20,000 to $150,000, depending on what testing was involved.

In the past year, Bellcore's sales and marketing staff has grown from zero to about 250, Farabelli said.■

## Sprint

*Continued from page 17*

typically launched by a toolbar within the graphical user interface. For example, users can initiate a trouble ticket without calling Sprint by clicking on a red flag reading "SOS." The previous version of Insite, going back several years, was merely an 800-call director launched through text commands, Branch said.

For smaller users, Sprint will roll out a software-only dial-up network management tool, dubbed Insite PC, that runs on Windows. Several of the applications for Insite Executive and Insite PC will be delivered during the first half of the year.

*For smaller users, Sprint will roll out a software-only dial-up network management tool, dubbed Insite PC, that runs on Windows.*

In the second half of the year, the carrier will deliver a product called Insite Agent that lets users import carrier network data into their Simple Network Management Protocol-based network management tools using a standard Management Information Base, Branch said. But users must provide their own graphical integration, he added.

Similar moves are under way elsewhere. Since September, MCI Communications Corp. has sold close to 100 customers on a PC-based Windows software suite call MCI ServiceView. The package provides fault monitoring, opens trouble tickets and automatically redirects inbound 800 traffic to alternate call centers.

MCI officials told *Network World* they are currently in beta test for an MCI ServiceView enhancement that would allow net managers to change their voice network mapping. With this tool, users can add or subtract a site from their MCI Vnet virtual private networks or change privileges assigned to particular sites or users.

AT&T already offers such capability with its SDN Customer Direct Configuration Management software tool for users of its Software Defined Network offering (*NW,* March 13, 1995, page 37).

And MCI's 800 Network Manager — one of the modules of ServiceView — replaces its earlier 800 Configuration Manager based on an IBM 3270-based command-line scheme. AT&T's Customer Direct tools also have gradually replaced command-line systems.■

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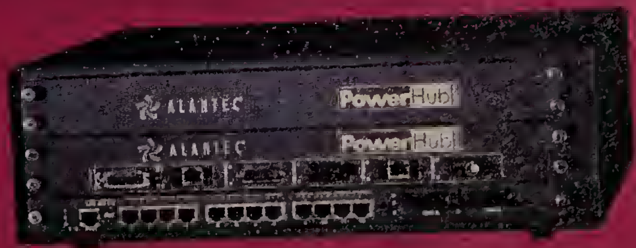

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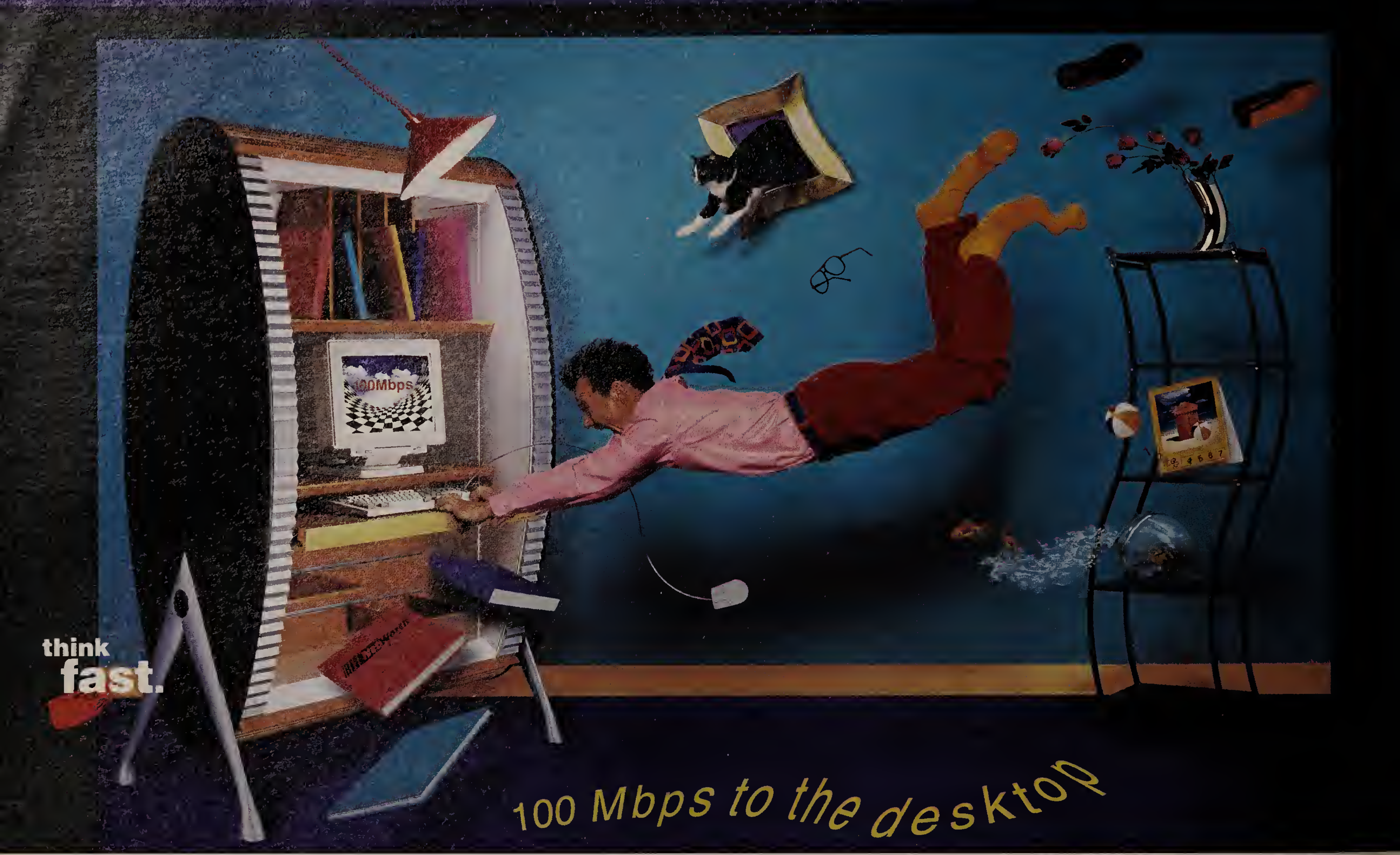

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# LAN World

**A Special Monthly Section for LAN Decision Makers**

## INSIDE LAN WORLD

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*Vendors rally around emerging I/O specification.*
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*Dave Kearns says Internet terminals don't make sense in a Windows world.*
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*Melinda Le Baron & Skip MacAskill advise you on token-ring switch vitals.*
**Page 10L**

## Briefs

■ **Novell, Inc.'s antipiracy** *team is prowling the cyber-Spanish Main again, this time in U.S. District Court in California, where it filed suit against 16 resellers Novell alleges were selling cut-price NetWare upgrades as new products.*

*The Novell group's most recent success was a joint venture with Microsoft Corp. to shut down a bulletin board system that was distributing commercial product free of charge. The group takes reports of pirated software at 1-800-PIRATES or pirates@novell.com.*

■ **IBM** *has licensed TCP/IP software from* **Network TeleSystems, Inc.** *for use with IBM's OS/2 Warp Server. The software will give DOS and Windows PCs access to OS/2 servers using TCP/IP across the 'Net or dial-up connections. OS/2 Warp Server will ship with both real- and protected-mode drivers, which will replace IBM's own drivers.*

■ **Compact Devices, Inc.** *will announce the TopSpin* **CD-ROM file server** *this week, a product that can act as an independent NetWare, Network File System or World-Wide Web server to access CD-ROM data, but is about the size of a paperback book. The box can connect as many as seven CD-ROM drives to an Ethernet LAN.*

*Compact Devices: (800) 894-0519.*

# Liven up the LAN with three hot new tools

**By Mark Gibbs**

In going about their daily business, LAN users spend an awful lot of time printing files, searching the World-Wide Web and pointing and clicking their way through applications.

In this quarterly review, we look at three tools that will make each of those tasks somewhat easier.

The first product, a $449 wireless system called GoPrint, solves tricky printer-linking problems. GoPrint, from AeroComm, Inc., can tie PCs to printers at distances up to 3,000 feet, given no obstructions.

This means you can tuck that

*See* **LAN tools,** *page 6L*

**Hot LAN tools make the job easier**

| Product | GoPrint | AnchorPage | RingMouse |
|---|---|---|---|
| Function | Connects PCs with printers at up to 3,000 feet | HTML document index generator | Wireless mouse |
| Price | $449 for a double pack of adapters, $249 for single adapters | $295 | $129 |
| Vendor | AeroComm, Lenexa,Kan. | Iconovex, Bloomington, Minn. | Kantek, East Rockaway, N.Y. |
| Phone | (800) 492-2320 | (800) 943-0292 | (800) 536-3212 |
| Fax | (913) 492-1243 | (612) 896-5101 | (516) 593-3295 |
| E-mail | Not available | fyi@iconovex.com | kantek@interserv.com |

# Banyan launches 'Net-based directory, enhances BeyondMail

**By Kevin Fogarty**
*Westborough, Mass.*

Banyan Systems, Inc. this week will announce a set of products and services aimed at breaking it out of the network operating system market and into the Internet business.

The products center around a World-Wide Web site, called Coordinate.com, that will host Switchboard, an Internet-enabled version of Banyan's StreetTalk directory containing the names and street addresses of about 93 million people and 17 million businesses.

**Get more info on Network World Fusion (http://www.nwfusion.com), including:**

- ▶ **An overview of existing white pages services**
- ▶ **A look at efforts to develop Internet-based software agents**
- ▶ **Articles on Banyan's Internet strategy**

**Select News+ then Local Networks.**

Also included will be a new version of BeyondMail, dubbed the Personal Internet Edition, which supports agent technology that can periodically scan an end user's favorite Web sites (see graphic, page 3L).

While Coordinate.com, Switchboard and BeyondMail Personal Internet Edition are all based on existing Banyan technology, the company is downplaying the ties. Except for BeyondMail, none of the products use the names of other Banyan products. Even Banyan's Internet division is taking a different name.

"That's intentional," said John Paul, senior vice president of Coordinate.com, which until this week was Banyan's Internet division. "We are taking the BeyondMail technology and directory technology and applying those to the Internet market without having to be concerned with Banyan's current customer base and product set."

Coordinate.com is designed to act as Internet white pages that will be available free to anyone with a Web browser. The database — a high-performance version of Banyan's StreetTalk directory — contains street addresses but does not have electronic mail addresses.

Users can change or delete their own entries but only by registering their names and E-mail addresses first. E-mail addresses will only be available if users add them and make that information public.

There is a privacy screen that will withhold an E-mail address from an inquirer, but will notify registered users when someone is trying to contact them. The user can then decide whether to supply an E-mail address.

Through a deal with 'Net security vendor VeriSign, Inc., Switchboard also will act as the repository for certificates and

*See* **Banyan,** *page 3L*

**High-speed LANs**

# Alantec powers up more fast E-net offerings

**By Jodi Cohen**
*San Jose, Calif.*

Alantec Corp. last week enhanced its fast Ethernet product line with new modules for its LAN backbone and departmental switching hubs.

The 100M bit/sec offerings — two modules for the PowerHub 7000 LAN backbone switching hub and two more for the PowerHub 6000 wiring closet chassis — are welcome news for many Alantec customers. Previously, the company only offered fast Ethernet support in its PowerHub 4100 workgroup switching hub.

Spencer Day, system director of MIS operations at Tufts Associated Health Plans, Inc. in Waltham, Mass., plans to evaluate Alantec's 100M bit/sec Ethernet modules for his PowerHub 7000 to help deal with increased network traffic.

"Membership of our HMO organization has gone up 130,000 members just in one year," he said. "We always knew that segmentation alone wouldn't save us, so we're looking at fast Ethernet as a high-bandwidth solution."

In addition, Alantec rolled out a 16-port module that supports two repeated 100M bit/sec segments with eight 100Base-T connections per segment. This allows customers to deploy a high port density fast Ethernet module while limiting the number of collisions on the shared LAN.

Alantec will offer a six-port 100Base-T module with copper and fiber connections for its flagship PowerHub 7000. Users can install as many as nine of the single-slot modules in the hub. Customers can use the module to link high-performance workgroups as well as support server farms and collapsed backbones.

Alantec, which was acquired last year by Fore Systems, Inc., also unveiled two similar fast Ethernet cards for the PowerHub 6000 wiring closet hub. They come in 12- and 24-port configurations.

☎Alantec: (408) 955-9000.

**ALANTEC IN THE FAST LANE**

| Product | Ports | Pricing | Availablity |
|---|---|---|---|
| Fast Ethernet module for PowerHub 7000 backbone switching hub | 6 | $5,950 | Now |
| Fast Ethernet module for PowerHub 7000 | 16 | $7,950 | Q2 |
| Fast Ethernet module for PowerHub 6000 wiring closet hub | 24 | $5,950 | Q2 |
| Fast Ethernet module for PowerHub 6000 | 12 | $10,950 | Q2 |

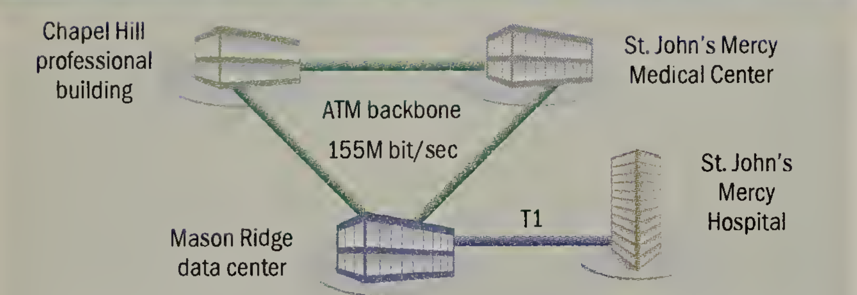
# Regional health care provider picks ATM as network cure-all

**By Paul Korzeniowski**

Asynchronous Transfer Mode and switched Ethernet technologies have soothed the network growing pains that plagued one regional health care provider.

St. John's Mercy Health System, which serves the St. Louis area, has moved from a shared Ethernet to an ATM backbone. In addition, it is replacing traditional connections with switched links that will provide the full 10M bit/sec Ethernet bandwidth to the desktop.

**Merciful bandwidth relief**


Chapel Hill professional building
St. John's Mercy Medical Center
ATM backbone
155M bit/sec
St. John's Mercy Hospital
T1
Mason Ridge data center

St. John's Mercy Health System uses Enterprise 1000 ATM switches from Whittaker Corp. to link its major facilities over 155M bit/sec fiber links. The company will bring the hospital onto the ATM backbone later this year.

GRAPHIC BY: TERRI MITCHELL

The network upgrade not only is helping the company alleviate bandwidth limitations of traditional Ethernet, but also is allowing it flexibility in meeting business growth plans, said David Weidman, director of advanced technology for the nonprofit medical organization.

### Patient history

St. John's Mercy Health System comprises a medical center, a hospital, a professional building and a data center. Its 4,500 employees maintain 1,100 beds and serve 335,000 patients a year. They work on 486- and Pentium-based PCs from Compaq Computer Corp., as well as Unix systems from Data General Corp. and IBM. The company also has IBM Application System/400 mid-range computers and an IBM 9000 series mainframe.

The health care provider had provided connectivity among users via a wiring hub from Bay Networks, Inc. But that design was inefficient because the PCs, Unix systems, AS/400s and mainframe terminals required separate lines, Weidman said.

The network also was coming under stress because employees had been sending an increasing amount of information — patient records and pharmacy orders, for instance — electronically. More sophisticated applications, such as radiological imaging, also were coming on-line.

As a result, some Ethernet segments were bogged down, Weidman said.

In addition to technical considerations, business factors pointed to a network upgrade. Like many health care providers, St. John's gradually has been expanding its reach; the professional building is a recent acquisition, for example. It needs a flexible network architecture that can readily accommodate requirements of ac- quired properties.

### Due diligence

In the fall of 1994, St. John's examined ATM, fast Ethernet, FDDI and switched Ethernet solutions. Weidman determined that ATM and FDDI each featured the resiliency needed in backbone networks, but that the former offered a better long-term migration path.

Weidman also decided that switched Ethernet provided a better option than ATM for unclogging desktop congestion. Standards for connecting ATM desktops are not mature enough and the per-connection cost is too high, he explained.

"Besides, not all of our departments need the bandwidth that ATM offers. Certain areas, such as agency administration, may never require that much bandwidth," Weidman added.

After examining products from Bay, Cabletron Systems, Inc. and Whittaker Corp., Weidman determined that the latter's Enterprise 1000 switch meshed best with St. John's goals. Using the Enterprise 1000, St. John's could start with switched Ethernet at the desktop and migrate to ATM just by swapping in a few modules. It would not need to replace the entire system.

What's more, Weidman added, the price was right. Whittaker's ATM-switched Ethernet platform cost only 20% more than an Ethernet-only solution, he said.

### From here to eternity

In March 1995, St. John's began its ATM migration. In the last year, it has installed Enterprise 1000 switches at the data center, the medical center and the professional building. Those switches are linked via fiber provided by local bypass carrier Digital Telecommunications, Inc. This private ATM backbone operates at 155M bit/sec.

About 500 users in six departments, including radiology, were upgraded to switched Ethernet connections. "They can now send large files without worrying about the impact on the network," Weidman said.

The new backbone has proven to be reliable. "The network has been up more than 99% of the time, and there have been few code revisions, which are typical with new technology," he said.

St. John's bought Hewlett-Packard Co.'s OpenView to manage the network because it seemed to offer an intuitive user interface and had support from many third parties, Weidman said.

For the time being, however, Whittaker's 20/20 network management software only runs on SunSoft, Inc.'s SunNet Manager. Weidman expects Whittaker to port 20/20 to OpenView soon.

The ATM migration continues this year. The health care agency plans to beta-test ATM services from SBC Communications, Inc. in St. Louis.

The local Bell company, which will use ATM switches from Newbridge Networks, expects to replace a T-1 connection to St. John's Mercy Hospital with an ATM line during the summer.

In two years, the organization anticipates moving from switched Ethernet to ATM at the desktop. The bandwidth boost will be needed by then because St. John's will have implemented medical imaging and videoconferencing applications, Weidman said.

### Virtual networking

Also next year, Weidman would like to use the Whittaker switches to create virtual LANs. Currently, the health care agency manages its Ethernet segments autonomously. The switches' VLAN capabilities are not strong enough yet, he said.

ATM and VLAN technology are largely untested, but that has not deterred St. John's Mercy Health System.

"The installation has gone so simply and smoothly," Weidman said. "I really don't feel like we have been on the bleeding edge."

*Korzeniowski is a freelance writer in Malden, Mass., who specializes in networking issues.*

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# Vendors rally around proposed network I/O specification

*Technology should make it easier to swap I/O devices in and out.*

**By Ben Heskett**
*San Francisco*

A slew of prominent vendors have given their stamp of approval to a new specification that proposes to increase compatibility between I/O devices and the servers or workstations they plug into.

The specification, devised by the recently formed Intelligent Input/Output (I2O) Group, will let any compliant adapter card or other I/O device communicate with any server, workstation or operating system that also adheres to the spec.

I/O device flexibility has become increasingly important to companies trying to update their network infrastructures to support I/O-intensive applications. If the specification becomes widely supported, companies will be able to swap network adapter cards, storage connectivity cards and other I/O devices without much hassle.

Vendors backing the specification effort include Compaq Computer Corp., Hewlett-Packard Co., Microsoft Corp. and Novell, Inc. (see graphic).

The specification is based largely on technology that has been used by NetFRAME Systems, Inc. in its servers since 1989, according to Carl Amdahl, former chief technology officer at NetFRAME and an I2O steering committee member. HP and Intel Corp. also were early contributors to the specification, which is being pushed as an industry standard.

"[Users and suppliers] can stop [messing] around with these commodity items and just make or buy the best ones without having to play games trying to make them compatible," said Bob Sakakeeny, an analyst with the Boston-based consultancy Aberdeen Group, Inc.

### Help for the little people

The spec could help smaller I/O device makers in particular, enabling them to spend more resources on developing new products rather than on building device drivers for multiple operating systems.

In addition, the specification should help remove net administrators from the role of network integrator, Amdahl said.

The specification, based on a standard message-passing interface that lets I/O devices talk to operating systems, is expected to be released in the first quarter. I2O-compliant products are expected to follow.

The initial release of the spec will support Windows NT, NetWare 4.X and UnixWare, as well as Ethernet, token ring, FDDI, ATM, SCSI, SCSI-2, fast SCSI and Fibre Channel.

**$I_2O$ GROUP BACKERS**

**Steering committee members:**
- 3Com
- Compaq
- HP
- Intel
- Microsoft
- NetFRAME
- Novell
- Symbios Logic

**Sampling of other members:**
- Adaptec
- Cyclone Microsystems
- Distributed Processing
- Mylex
- Standard Microsystems
- Tandem
- Western Digital

The specification will be available on the I2O Group's Web site (http://www.I2Osig.org) in March.

Membership information is available by calling (415) 750-8352. ■

# HP makes its Unix software better for nets

**By Ben Heskett**
*Palo Alto, Calif.*

Hewlett-Packard Co. last week announced an updated version of its Unix operating system that makes machines better network servers and clients.

Enhancements to HP-UX 10.10, which runs across the PA-RISC based HP 9000 hardware line, include Common Desktop Environment (CDE) compliance, support for the Dynamic Host Configuration Protocol (DHCP), improved systems management capabilities and a larger file system.

Support for CDE provides end users with a common graphical user interface that can simplify the process of training employees.

Computer systems running HP-UX 10.10 should also be easier to manage as DHCP support makes it possible to centrally manage TCP/IP stacks. HP also has extended its System Administration Management technology to smooth the process of adding or deleting system resources.

The updated operating system is designed to carry heavier loads. Its file system size has grown from 4G bytes to 128G bytes, making it better suited to handle on-line transaction processing and other heavy-duty applications. In addition, HP has increased the operating system's RAM from 2G bytes to 3.75G bytes.

Other enhancements include better file-descriptor support, with an increase from 2,000 to 60,000 descriptors.

A two-user HP-UX 10.10 license will come bundled with HP 9000 workstations and servers. The software is expected to be available Feb. 20.

©HP: (408) 553-5300.

## Banyan

*Continued from page 1L*

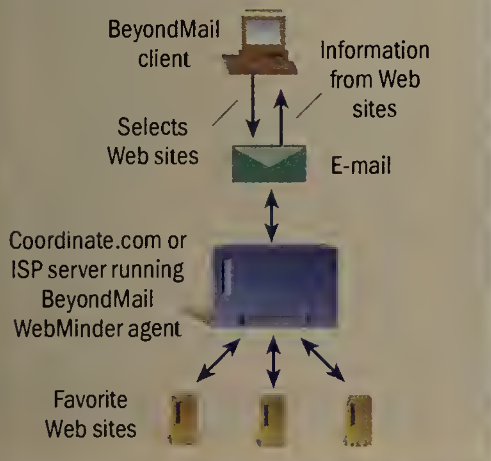
public keys used to authenticate E-mail messages.

### BeyondMail gets personal

BeyondMail Personal Internet Edition, the beta version of which is available now on the Web (http://www.beyondmail.banyan.com), includes a Simple Mail Transfer Protocol gateway and most of the rules-building features of other BeyondMail editions.

**MINDING THE WEB**

Banyan's WebMinder agent sits on a rules server maintained by Banyan or an ISP, polls selected Web sites for new information and mails the information to an end user.


BeyondMail client
Information from Web sites
Selects Web sites
E-mail
Coordinate.com or ISP server running BeyondMail WebMinder agent
Favorite Web sites

There also will be a server-based agent called WebMinder that can scan a user's favorite Web sites and message material to BeyondMail clients. The material can be viewed off-line via a Web browser.

The agents reside on Internet servers maintained by a corporation or an Internet service provider (ISP). Banyan will maintain rules servers at Coordinate.com and provide free access to them. But the company also is negotiating with ISPs to try to make commercial WebMinders rules servers common.

While Banyan plans to make a little money by selling the new BeyondMail version for $29, it will make nothing on providing access to Coordinate.com. Banyan will look to generate revenue by pushing StreetTalk/Switchboard and the Web technology in BeyondMail as de facto standards and from add-on products, Paul said.■

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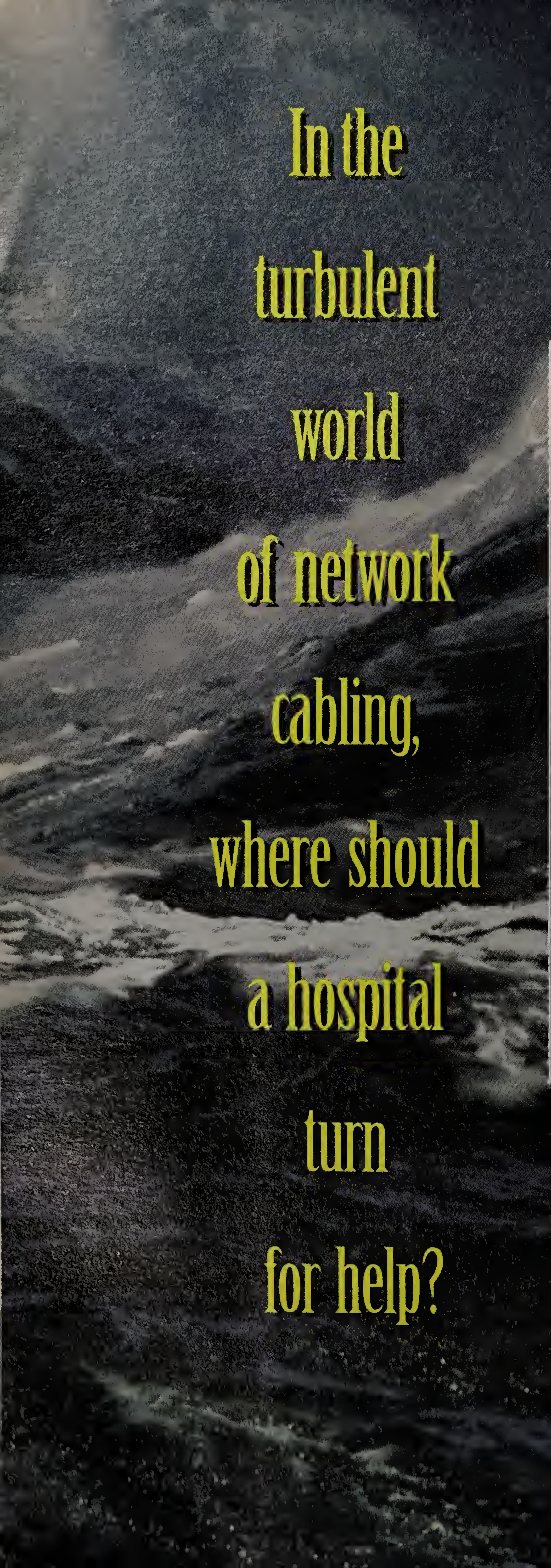
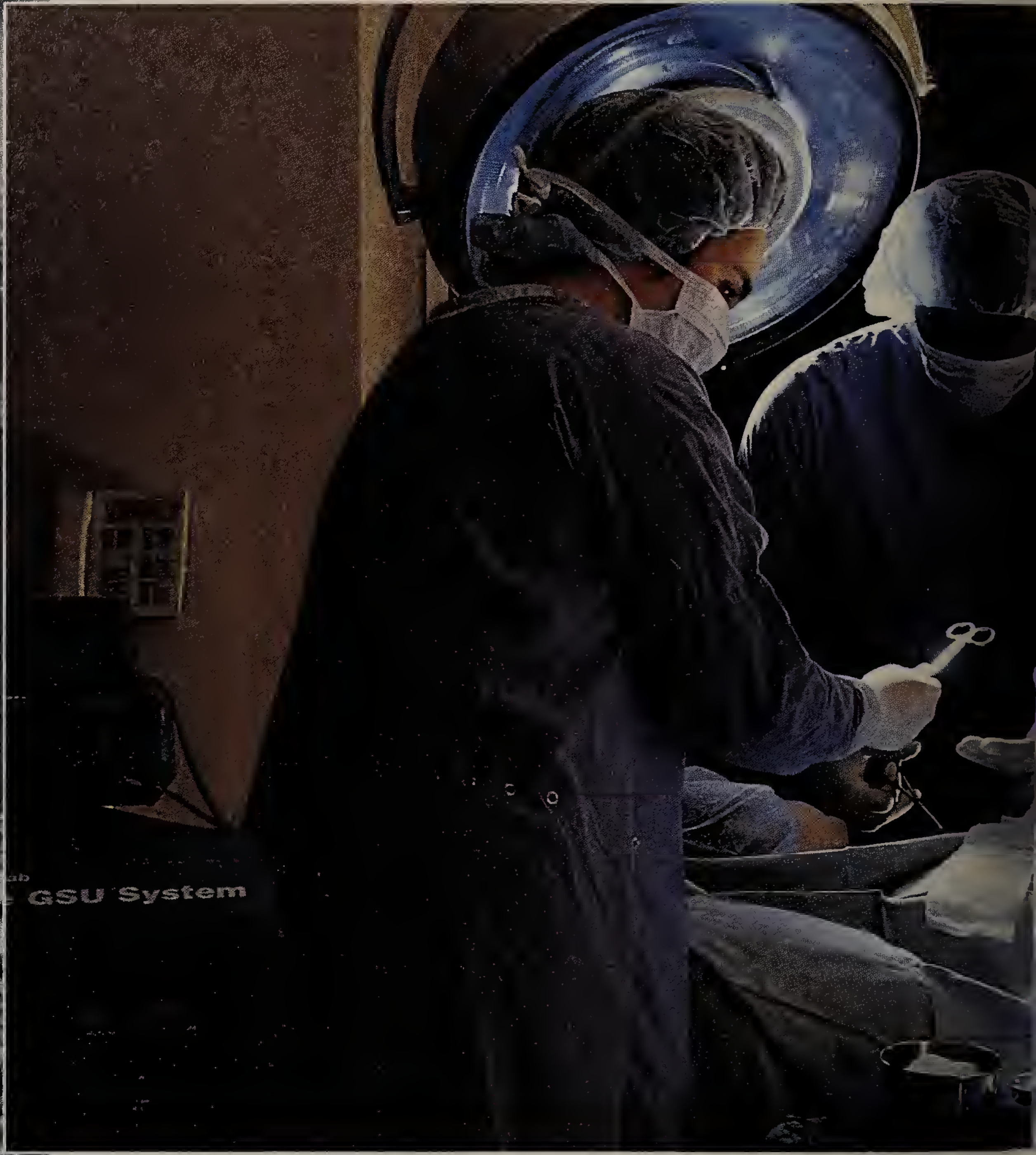
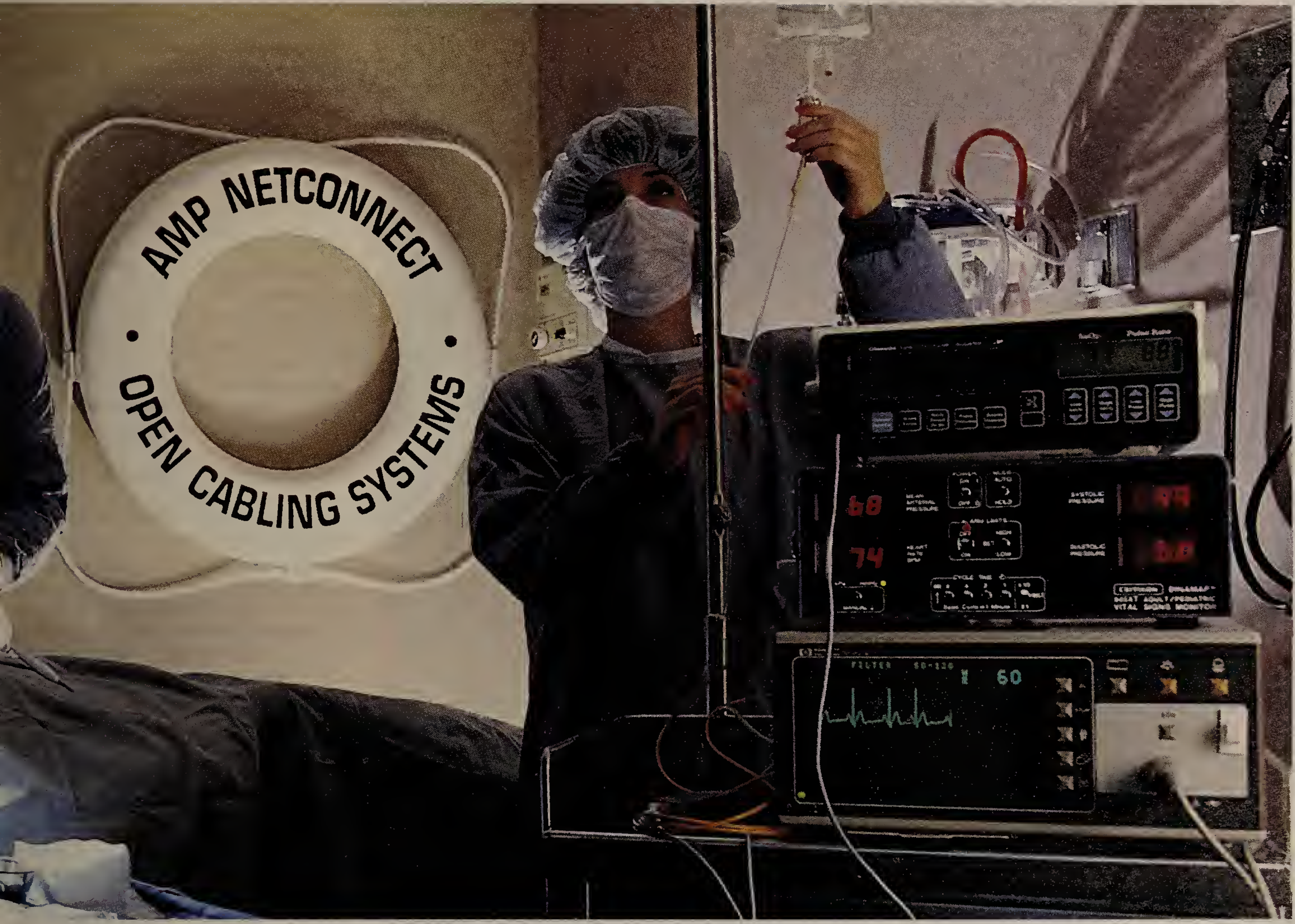


# Where 124 other hospitals did.



For applications such as hospitals, where the soaring requirements of imaging systems on bandwidth, the constant growth of voice and data traffic, and the demand for unquestioned reliability all compete for immediate attention, selecting a hospital's premises cabling system, and company, is particularly critical.

That's why AMP is chosen repeatedly by networking-dependent enterprises such as



banks, universities, national retail chains, government buildings, as well as hospitals, to accommodate change and anticipate growth.

With decades of involvement in virtually every aspect of networking, innovations that include the standards-based AMP NETCONNECT Open Cabling Systems, and hundreds of installations at both the building and LAN level, AMP is uniquely qualified and equipped. From designs that maximize today's technology and mesh easily with tomorrow's to complete cabling system certification, a 15-year warranty of performance and after-sale support.

Whether your direction is FDDI, ATM or beyond, we can speed your trip with fiber (now parity priced with other media), as well as UTP, STP and coax. We can also handle future major expansions as well as routine adds, moves and changes with punctual and professional AMP-trained and authorized Network Design and Installation personnel. And our phone support for remote diagnostics is ready when you need it.

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AMP and NETCONNECT are trademarks.

For more information on AMP NETCONNECT Open Cabling Systems, call us at 1-800-835-7240 (fax 910-727-5858) and ask for the Network Action Center. AMP, Harrisburg PA 17105-3608. In Canada, call 905-470-4425.

*Circle Reader Service #1*

AMP

## LAN tools

*Continued from page 1L*

old, clattering line printer (the one you'd rather not admit to still owning) in the broom closet and link it to PCs without having to drill holes, route cables or use signal conditioners.

Better still, you can set up this printer hideaway and close the door to it within 15 minutes, provided the radio environment is conducive.

Actually, most of that time will be spent manhandling the printer. It really takes only a few minutes to remove GoPrint from the box and link a PC to a printer. It takes only a bit longer to establish security codes for multiple PCs.

The GoPrint package comprises two small black pods, power adapters and connectors that plug into the parallel ports of the computer and printer. It requires IBM-compatible PCs and printers, at least the 3.1 version of Microsoft Corp.'s Windows or DOS, and 1M byte of hard-disk space for the system and configuration software.

GoPrint is expandable to as many as eight printers fed by an unlimited number of PCs. To add computers, you simply pop in the configuration software and give your computers and printers names to identify them for multiple sharing. And the same software allows you to set up passwords for a security system. Simple as that.

Oddly, AeroComm hides the idea of linking printers and file servers well in the back of the product manual. This is one of the really useful applications of GoPrint, and it works excellently.

Of course, it does require configuring the adapters on a PC first. AeroComm gives some weak advice about configuring for Novell, Inc.'s NetWare, but administrators should have little trouble configuring their own systems.

GoPrint is limited to unidirectional transmissions, which means you can't use it with output devices such as plotters that exchange data with the host.

The GoPrint system uses spread-spectrum radio at 2.4 GHz. This technology allows transmissions at up to 500 feet indoors. But the adapters must be placed at least 4 feet apart.

We did not read the instructions very clearly before our test, and our big print job shut down because we did not have the adapters far enough apart. Once we followed the instructions, the print job continued.

*All in all, GoPrint is a robust and durable product. The instructions are a bit clunky and a little fuzzy on configuration.*

Other factors that may affect performance are heavily reinforced concrete or steel-wall construction. The manual is also quite insistent about the system not working well around serious microwaves, so if you pop lots of corn at the office, be forewarned.

All in all, GoPrint is a robust and durable product. The instructions are a bit clunky and a little fuzzy on configuration. Just remember that the unit that eventually winds up attached to the printer first must be programmed on the PC.

### Look, Ma, an index!

These days, many MIS groups are deluged with demands to build intranet services — the new, hip name for an internal Web server and other Internet-like services. They're faced with an enormous pile of documents that the folks in accounting or human resources not only want on the server, but also want indexed. "You MIS guys are so clever," they say. "I'm sure you'll find a simple way to index the documents."

It's hard for many MIS people to resist such a challenge. But how do you take all of the Word and text documents and build a truly meaningful index? After all, half the fun is coming up with something way beyond expectation.

One option is to employ a tool from Iconovex Corp. called AnchorPage. This utility takes documents written in HTML and produces a number of different indexes.

AnchorPage, which is based on an English-language parsing engine, extracts meaningful words and snippets

**SATELLITE** Ceiling based unit for 360° wide-angle communication

**NODE** Desktop or wall based unit for communication with Satellite

**STATION** Desktop or wall based unit for 'point-to-point" communication

**MOBILE** Desktop based unit for commnication with PC Card

**PC CARD** Dedicated Type II PCMCIA card

**POWER HUB** Network hub with integrated AC power

**T-ADAPTER** Connects components to AC power and standard network hub

- 10 Mbps data throughput
- Ethernet® standard compliance: IEEE 802.3 and Ethernet II
- Suitable for any size LAN
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- Eliminates the need for LAN cables

**A Superior Network Solution** There has never been a wireless communication system as powerful as VIPSLAN-10. Optical technology enables you to transmit data at fast 10Mb/s speeds over 10BaseT lines — safely and accurately. No conversion to local protocol is necessary here. Just higher speeds and greater efficiency than ever before.

**Simple Installation** Installation couldn't be simpler. A compact, hi-tech central ceiling transmitter links with local transponders on mobile units or desktop systems. There's virtually no wiring, no need to change existing hardware or software, and no special gateway or protocol setup necessary. An automatic search is performed to locate the IR beam and establish connection.

**Total Compatibility** VIPSLAN-10 provides complete compatibility with wired Ethernet systems. So you can extend your wireless system using a wired LAN—even over an entire campus area—with complete reliability. And unlike radio frequency, VIPSLAN-10 offers secure data communications, as infrared will not escape walls or barriers.

**Unmatched Versatility** VIPSLAN-10 will not interfere with other office systems; it will operate perfectly even in the presence of electromagnetic machinery, as in a manufacturing warehouse. You can choose from variety of configuration options. Install a 'Satellite/Nodes' based system in new buildings or retrofit an existing building with a 'Station-to-Station' system. We have designed VIPSLAN-10 to draw power directly from our Power Hub. For added flexibility, with the addition of our "T-adapter," you can connect to a regular AC outlet and use your existing network hub.

**Seamless Integration** VIPSLAN-10 integrates seamlessly with other JVC network products, such as Network RomMaker, a powerful CD-Recording system which allows you to record discs across your network, and CD Archive Manager & CD Library Manager, which provide easy access to multiple CD-ROM volumes anywhere on your network (used in conjunction with JVC's CD-ROM Towers, Minichangers and Libraries.)

**Free Your Network** To learn more about how VIPSLAN-10 can help you operate more quickly and efficiently, call today for free technical information.

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Microsoft SOLUTION PROVIDER

yes It runs with NetWare

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*Circle Reader Service* **#2**

to create concept, phrase and abstract views. A-to-Z listings front the various views. The indexes turn out to be somewhat more than mechanical extracts of the documents.

The product is extremely configurable — the depth of analysis can vary, the vocabulary can be edited for specialized purposes, and optimization features can minimize the index file sizes. AnchorPage also can add links that let phrases and ideas in the documents be followed without returning to the index. These are called circular links.

While it's easy to create the indexes, getting exactly what you want takes a little work. The utility can be run with either a standard interface that has a lot of option selection boxes or with a much more useful map, which is essentially a flowchart that diagrams the relationship between the indexes generated and their parameters. (It beats us why Iconovex chose an almost unreadable color for part of the map page.)

It can be quite time-consuming to generate the indexes. When running on a 33-MHz 486 computer, AnchorPage took about 8 minutes to index the 61K-byte HTML-ized file created from my Web page that is devoted to lightbulb jokes (see http://www.gibbs.com/bulbjoke.htm). An overnight run is probably best for a large document set.

The layout of the default indexes is a little sparse and the default graphics are clumsy. However, just about every aspect of the layout and content can be reconfigured so we can overlook these aesthetic niceties.

We were impressed with the test results. The system really does create useful indexes based on syntactically correct abstracts of the source documents. It also comes with a fairly good Rich Text Format-to-HTML converter and an editor for the lexicons. This tool will appear heaven-sent to MIS people trying to build intranet document sets.

### Look, Ma, a mouse?

We thought we'd seen just about every kind of pointing device. We've played with mice that look and feel like fat potatoes, pads poked by fingers, mice-like pens, trackballs of every shape and size, ergonomically sculptured mice and mice that were, well, let's just say odd.

Now we've found a mouse that breaks the ennui. Our interest was rekindled when we discovered the RingMouse from Kantek, Inc.

RingMouse is a wireless device that lets you control the on-screen mouse by moving your hand left and right and up and down. It also supports Z-axis control for movements toward and away from the screen, though not many business software programs use this mode.

The RingMouse looks like a black peanut with a Velcro belt that gets strapped on the thumb side of the index finger. It has two buttons that can be pressed by your thumb and a little grille that is angled toward the screen when your hand is in the right position.

The PC senses the position of the RingMouse by ultrasound generated by the grille. The ultrasound waves are picked up by an L-shaped frame that sits on top of the monitor. (Unfortunately, the frame won't fit on laptops since the LCD screens are too thin.) The button presses are transmitted by infrared, and the mouse control data is sent to the PC via a serial port.

We associate RingMouse with networking for one major reason — sometimes in server installations you simply don't have space to steer the fat potato around. It's really nice just waving your hand rather than navigating a mouse around a little pad that barely provides an adequate surface for a cup of coffee.

And at less than $100, the RingMouse is not prohibitively expensive for the purpose.

Beyond that, network managers might want to get a RingMouse simply because it's cool. It's a toy that says, "I am wired."

Documentation is OK, and installation is simple. You can even use RingMouse at the same time as your conventional mouse. This is a fun device that really comes in handy when there's restricted space or you just want to look cool.

*Gibbs is a consultant and writer based in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or via the Internet at mgibbs@gibbs.com.*

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Dave Kearns

WIRED WINDOWS

# Fighting off Internet terminals

Amazingly, the topic of the $500 Internet terminal refuses to die, even among knowledgeable net managers and administrators.

For those of you who have been somewhere else for the past six months, this is a device consisting of a monitor, keyboard or pointing device, CPU, network connection and a small amount of RAM. The device was first touted by, I believe, Oracle Corp. CEO Larry Ellison as the appliance to get everyone attached to the Internet.

Others have said it will lead to the death of software distribution as we know it since all the software you need will be downloadable from the 'Net. Adjectives such as "animated" and "interactive" are the words most often used in conjunction with the Internet terminal. If this sounds more like a game machine than a computer, you're not very far off. "So," you ask, "what's that got to do with me?"

First, a deja vu interlude. Back in 1987, I had a number of machines on my network called diskless workstations. Each had a monitor and keyboard, an 8088 CPU and 640K bytes of RAM with a built-in Ethernet interface. At the time, these were adequate for the five- to 30-user networks I was assembling.

But with the advent of Windows and Windows applications, these machines were no longer adequate for any sort of productivity. Too much time and network bandwidth were used loading and overlaying program code and swapping RAM to disk. Are you still wondering what this has to do with you?

Somewhere in your company is a manager who's struggling with what he considers a vastly underfunded budget. This manager is also an avid reader of the business pages of the newspaper and is going to want $500 Internet terminals instead of $2,000 to $3,000 PCs in the budget. After all, who are you compared to Ellison? This manager will be dead serious. This manager may be your boss or the company's chief financial officer.

Start building an information file on performance and productivity, network throughput, Internet access speeds and throughput, as well as application usage. That last part is especially important.

### TIP OF THE WEEK

*A few weeks ago, I mentioned the WINSTART.BAT file as a place to load TSRs before running Windows 95. If there are Windows applications you wish to run on bootup — before logging on — the place to put them is in the Windows 95 Registry. The key "HKEY—LOCAL—MACHINE\SOFTWARE\Microsoft\ Windows\ Current Version\RunServices" is the place to put these entries (not "Run," "RunOnce" or "RunServicesOnce").*

Remember the "death of software distribution as we know it" I mentioned above? No more purchasing software. Instead, there'd be a onetime usage charge associated with downloading it — whenever you wanted to use it.

Think about how often you fire up your word processor, spreadsheet or electronic mail reader. Then think about dropping a quarter in a slot every time you load the application. Have you started writing that budget impact statement yet? What are you waiting for?

*Kearns, a former network administrator, is now a freelance writer and consultant in Austin, Texas. He can be reached at dkearns @msn.com.*

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9. Examine how emerging CTI (Computer Telephony Integration) capabilities like Novell's TSAPI and Microsoft's TAPI can be integrated into your remote access strategy
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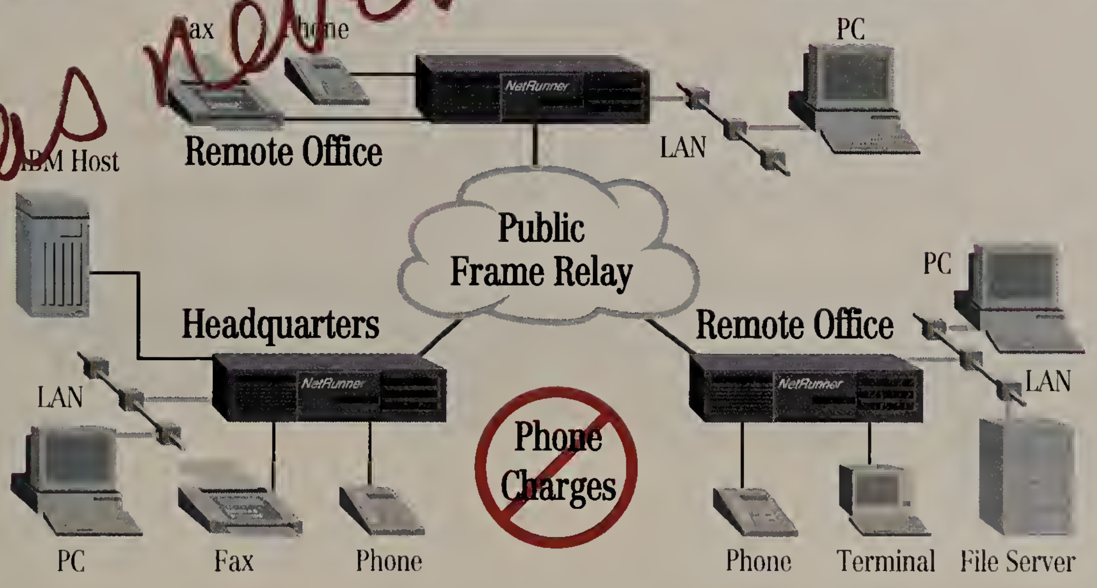

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NET RESULTS

# What to look for in a token-ring switch

The token-ring switching market is finally coming into its own.

After months of posturing, promises and platitudes, this emerging market stage now has a cast of proven performers, including Bay Networks, Inc., Cabletron Systems, Inc. and Xylan Corp. Cisco Systems, Inc. and other would-be scene stealers are waiting in the wings.

While token-ring users still have nowhere near the number of switches to choose from as do their Ethernet counterparts and are deploying switches for quite different purposes, selecting the most appropriate switch involves the evaluation of many of the same parameters.

Here are the top ones:

**Cut-through vs. store-and-forward.** Cut-through switches will offer the least device latency since they merely check the address header before switching a packet to its destination. Because no checksum is performed, however, these switches also have the potential to propagate bad packets to the network. Store-and-forward switches will offer higher latencies since each packet is buffered before being sent to its destination port, but they eliminate bad packets and support high-speed uplinks — things that a pure cut-through switch cannot offer.

**Frame-based vs. cell-based.** Frame-based token-ring switches will swap traffic between token rings in native format without changing the packet structure. Other switches will always convert a token-ring frame into an Asynchronous Transfer Mode or proprietary-length cell before sending it to its destination port, even in transmissions between token rings.

While some might argue that cell-based switching between like LAN types introduces unnecessary overhead, it does provide for a better migration path to ATM.

**Internetworking schemes.** Since token-ring networks typically support a high percentage of nonroutable protocols, such as NETBIOS, the need for the switch to support routing may not be a high priority. But with the phenomenal growth of IP-based applications, some level of Layer 3 functionality may become more important in these devices in the near future.

In order to more easily fit into existing token-ring environments, the switch should also support — at a minimum — source route bridging.

**Filtering and broadcast control.** Since the switch is really nothing more than a hardware-based bridge, the user should be concerned about how the device will handle broadcasts, multicasts and network flooding. Features such as NETBIOS name caching, which controls NETBIOS name query broadcast traffic, and media access control address caching, which controls explorer broadcast traffic, also need to be considered.

**Port configurability.** The ability to configure a port as full-duplex will allow server connections to be used more efficiently. As in any good token-ring device, the ports should be able to autosense between 4M and 16M bit/sec connections.

**Manageability and price.** At the very least, the switch should be manageable via the Simple Network Management Protocol. With the exception of IBM's 8272 switch, which is priced around $700 per port, users should expect token-ring switch costs to come in between $1,200 and $1,500 per port.

*Le Baron is a research director and MacAskill a senior research analyst in Gartner Group, Inc.'s Network Computing Infrastructure group. Contact them via E-mail at inquiry@gartner.com or call (203) 316-1111.*

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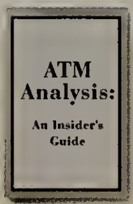

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*Circle Reader Service* **#39**

## Briefs

■ **Forte Software, Inc.** *this month will ship an option for its* **application development tool set** *that lets programmers take a Forte application model and generate a complete working application from it, including client screens, database calls and application logic.*

*Forte Express generates standard Forte-class libraries that can be changed as needed. All the changes are preserved if developers later regenerate the application. Forte Express costs $20,000 per site.*

*Forte: (510) 869-3400.*

■ **Oracle Corp.** *and* **IBM** *last week announced availability of the Oracle 7 for MVS Release 7.2 Parallel Server Option for IBM's System/390* **parallel servers.** *The software will let customers run multiple Oracle databases — called instances — on multiple S/390 processors for very large applications and workloads. The instances and the overall system appear to be a single database. South African Police Services tested the parallel system and estimated it could cut by 72% the total cost of ownership of its existing environment — 173G bytes of data in 22 Oracle databases running on traditional IBM mainframes.*

*Pricing starts at $1,995 per concurrent user.*

*Oracle: (800) 842-4425.*

■ **Ramco Systems Corp.** *of Fremont, Calif., has unveiled* **Treasury Funds Management,** *a client/server application for its Marshal line of integrated business applications.*

*The company also introduced into the Marshal product line an object-oriented technology that identifies and registers all transactions and screens as objects, such as Dynamic Link Libraries and OLE 2.0 objects. Customers can then select a particular set of transactions from different Marshal modules to build a customized application.*

*Ramco: (510) 494-2939.*

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**Data warehousing**

# Tools to get 'Net hooks

**By Barb Cole**
*Orlando*

Even the data warehouse market is now feeling the World-Wide Web's effect.

New products from two vendors are aimed at companies that wish to give branch offices, trading partners and even customers access to corporate data warehouses via the Internet. The products were introduced at the Data Warehouse Conference here.

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**Mine a wealth of white papers on every facet of data warehousing on Network World Fusion (http://www.nwfusion.com). Select News+ then Client/Server Applications.**

MicroStrategy, Inc.'s DSS Web is a Web-enabled version of the company's DSS software, which culls data from several relational databases and performs on-line analytical processing (OLAP) queries on it.

Server-based DSS Web enables end users to access data warehouse applications via standard Web browsers. The software sits on a machine between the database and Web servers, and passes results of OLAP queries to the Web browser.

Deploying a typical data warehouse application via the Internet can potentially save companies millions of dollars on hardware and software, said Michael Saylor, MicroStrategy's president and chief executive officer. "[Using the Web] doesn't completely eliminate the capital costs, but it reduces the costs associated with maintaining a proprietary network and distributing and maintaining client applications," he said.

Users agreed that the economics are appealing.

"If we can distribute our data warehouse application via the Web, we'll

*See* **Web,** *page 31*

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# IBM weaves Web add-on for workflow

**By Barb Cole**
*Orlando*

IBM last week rolled out software for hooking applications built around its workflow software to the World-Wide Web.

The Internet Connection to FlowMark is an add-on to the company's workflow application that enables end users to invoke workflow processes and receive to-do lists via standard Web browsers.

The software, announced at the Giga Information Group Business Process and Workflow Conference here, eliminates the need to have FlowMark run-time software on each desktop, according to Susan Schwartz, program manager, IBM Software Solutions marketing.

The Internet Connection to FlowMark could be used by a customer, for example, to browse a FlowMark-based insurance application and complete a standard HTML form to receive a sales quote. The information could then be used to initiate all necessary processes on the FlowMark server, delivering the quote and posting the activity on a salesperson's work list.

### CLIENT/SERVER VS. INTERNET APPLICATION DEVELOPMENT

| | Client/server | Internet |
|---|---|---|
| Time to develop application | 6 to 12 months | 2 to 3 months |
| Time to deploy | 1 to 2 months | 2 to 3 weeks |
| Time between versions | 1 year | 1 week |
| Scale | 50 to 200 users | 1,000 to 1 million users |

SOURCE: FORRESTER RESEARCH, CAMBRIDGE, MASS.

Analysts said the announcement is a solid first step toward enabling users to distribute FlowMark applications on the Web on a large scale.

"I think IBM has more widespread plans [for FlowMark and the Internet]," said Scott McCready, an analyst at International Data Corp. in Framingham, Mass.

Companies ultimately want to build workflow applications that span more than one geographic location, McCready said. "The most viable way to do that will be via the Internet," he said.

Also at the conference, IBM announced a tool called Business Process Modeler, which lets users graphically model workflows and export them into FlowMark.

Previously, most customers needed to use third-party flowcharting tools that could not be integrated with FlowMark.

The Internet Connection to FlowMark will be packaged with FlowMark later this year. Pricing was not available. The Business Process Modeler costs $4,000 and is available now on OS/2. A Windows version will ship later this year.

© IBM: (800) 426-2255.

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### Building client/server apps on the 'Net

| | | |
|---|---|---|
| **Vendor/ product(s)** | Powersoft/Optima++ | SourceCraft/NetCraft, ObjectCraft and SourceCraft |
| **Description** | Visual tool set for C++ with support for OLE and key Internet standards | Visual tool sets for Java and C++ development; support OLE controls, Internet standards |
| **Key features** | Supports PowerBuilder controls, such as DataWindow and DataPipe; includes Watcom compiler, SQL Anywhere desktop database | Built-in support for object oriented as well as relational data; powerful C++ memory management capabilities |

# SourceCraft, Powersoft aid Java, C++ client/server development

**By John Cox**

Two companies last week unveiled graphical development tools for building reusable C++ and Java applications that can exploit the World-Wide Web.

Start-up SourceCraft, Inc. and industry veteran Powersoft Corp. have separately created sets of graphical programming tools to make it easier for C++ programmers to build and deploy object-oriented applications that can be inserted into HTML documents on Web servers and into Web browsers on client PCs.

SourceCraft, located in Burlington, Mass., announced three related products: NetCraft, ObjectCraft and SourceCraft.

NetCraft is a visual programming environment that can be used to generate client applications in Sun Microsystems, Inc.'s Java programming language.

ObjectCraft uses the same development tools but generates ANSI standard C++ code for server-based applications.

The third tool set, SourceCraft, to be announced this summer, will let programmers build and interconnect Java and C++ components running on networked clients and servers.

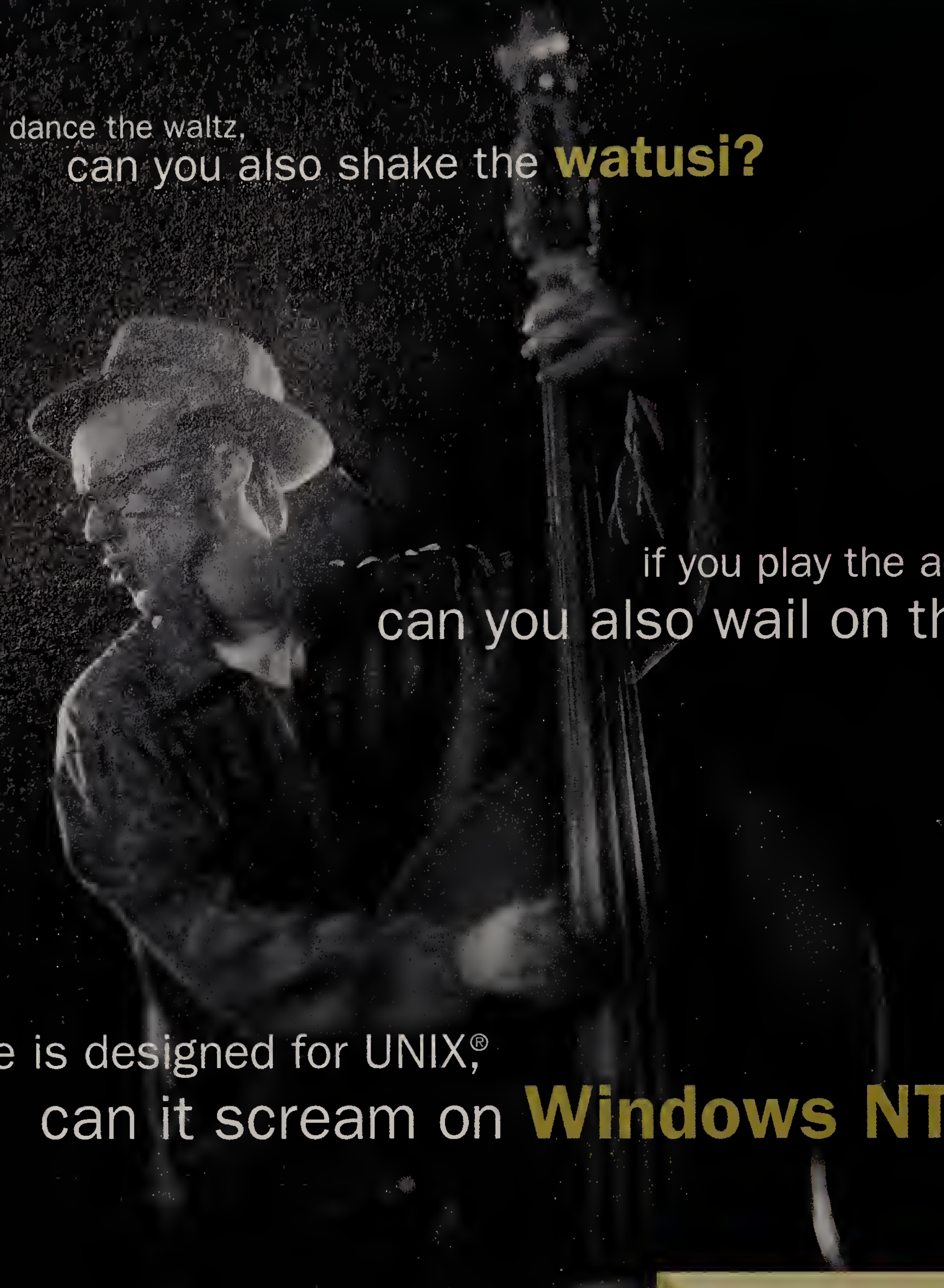
NetCraft will be downloadable at no charge for the first three months from the SourceCraft Web page (http://www.sourcecraft.com) beginning in April. It will later cost $995 per user. ObjectCraft is available now for $1,995 per developer.

Both will run on Microsoft Corp. Windows, Windows NT and Windows 95. SourceCraft pricing will be announced this summer, and the product will be available in the fall.

Powersoft, the Concord, Mass.-based tools division of Sybase, Inc., has taken an approach similar to SourceCraft's with its Optima++ tool set, which also supports C++ development on Windows platforms.

To deploy Optima applications on the Internet, programmers can create extensions to Web browsers and incorporate on server-based HTML documents Java applets and Microsoft OLE sweeper controls. The tool set supports the Common Gateway Interface, Microsoft Internet

*See* **Tools,** *page 31*



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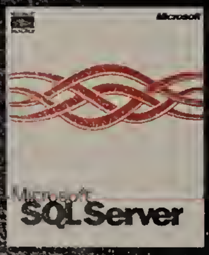

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# Intel adds broadcasting to ProShare conferencing line

**By Joanie Wexler**

*Hillsboro, Ore.*

Intel Corp. has expanded its ProShare desktop videoconferencing line to allow a central site for broadcasting speeches, training sessions or other information to LAN-based conference participants.

The company announced ProShare Presenter client software as another option in the ProShare family, which already allows point-to-point and multipoint videoconferences. If the customer is an existing ProShare shop, Presenter software for Windows 3.1 or Windows 95 is all users need to view presentations.

Presenters can display materials such as spreadsheets and slides in a separate window.

The software allows for quasi-interactive communications: Participants receiving the broadcast can submit written questions or requests to speak over the network from their PCs.

Pat Gelsinger, vice president and general manager of Intel's Personal Conferencing Division, said the difference between Presenter and ProShare's multipoint capabilities is that multipoint conferences entail a group of peers who can all see and hear one another. The multicast capability is geared for one-to-many broadcasts, where information must be disseminated to a large number of people simultaneously, he said.

For example, "there could be a huge market for multicast in the securities industry as an alternative to brokers clustering around a speakerphone in the morning to find out from the boss how the [stock] market is doing," said James Bryce, an independent consultant in Austin, Texas, who follows wide-area technologies.

In addition, distance learning and telemedicine programs that have become part of many state budgets are naturals for this type of communication, he said.

But the system isn't perfect. Presenter requires 500K bit/sec of wide-area bandwidth, precluding use of the product with ISDN basic rate network services, which max out at 128K bit/sec. Intel demonstrated the software at its announcement over T-1 lines running among San Francisco, New York and here.

Part of the reason for the large bandwidth requirement is that delivery depends on the IP protocol, analysts said.

Presenter relies on IP Multicast support in the routers at the receiving LAN to distribute the presentation. IP Multicast stuffs the addresses of participants in the header of one or more IP packets, the router reads them and delivers the packets accordingly, explained Elliott Gold, a conferencing consultant and president of Telespan Publishing Corp. in Altadena, Calif.

While IP Multicast conserves bandwidth — compared to broadcast protocols — by targeting specific nodes, "anything you do over IP requires a lot of bandwidth," Gold said. ■

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**Infrastructure required:**

500K bit/sec of wide-area bandwidth; LANs connected to WAN via a router supporting IP Multicast

**Availability:**

Now

## Web

*Continued from page 29*

have a real win-win situation," said Dave Talsky, IS manager for global sales technology at S.C. Johnson & Son, Inc. in Racine, Wis.

The company, which already uses MicroStrategy's DSS Agent tool, is eyeing DSS Web as a way to distribute sales information from its corporate warehouse to branch offices.

"We have more than 40 offices all over the world. If we can give them access to the warehouse via the Web, we'll save a lot of money," Talsky said.

DSS Web will be available in March for Windows, OS/2, Macintosh and Unix. Pricing for a bundle including DSS Web and DSS Server starts at $50,000.

### Red Brick access

Separately, Information Advantage, Inc. announced WebOLAP, an add-on to its DecisionSuite Server for drilling down on information in a Red Brick Systems Corp. data warehouse using a Web browser.

WebOLAP software resides on the Web server. It will be sold in a bundle with Red Brick Warehouse for Workgroups for $40,000 beginning in the second quarter. Around the same time, the WebOLAP capability will be added to the DecisionSuite Server tool.

Analysts said the Web may be an excellent vehicle for letting users tap into corporate storehouses of information, but there are lots of obstacles.

"For now, you'll have to have some restrictions on how you architect such a warehouse," said Bob Moran, an analyst at Aberdeen Group, Inc., a market research firm in Boston.

For example, users cannot presently join data from several databases via the 'Net, he said.

Another issue is network performance, S.C. Johnson and Son's Talsky said. "Sometimes the 'Net slows down," he said.

©MicroStrategy: (703) 848-8600; Information Advantage: (612) 820-0702.

## Tools

*Continued from page 29*

Server API and Netscape API.

Unlike the SourceCraft products, Optima++ will use the native component technology found in Powersoft's PowerBuilder 5.0 development tool, including three powerful controls: DataWindow for database access; DataPipeline for moving data between databases; and InfoMaker for database reports.

The finished applications can be deployed as a single .EXE file or as Dynamic Link Libraries.

The tool set includes Powersoft's high-performance Watcom C/C++ compiler, its S-Designor database design tool and its desktop SQL database, SQL Anywhere (formerly called Watcom SQL).

©SourceCraft: (800) 462-5328; Powersoft: (519) 886-3700.

## BusinessBriefs

**Klaus Besier** has stepped down as president of **SAP America, Inc.**, which markets the R/3 client/server business applications suite, to become the chairman and chief executive officer of Business@Web in Cambridge, Mass.

Business@Web makes a suite of Internet application development tools called OpenScape. Taking over as SAP America's CEO is Paul Wahl, a five-year SAP veteran.

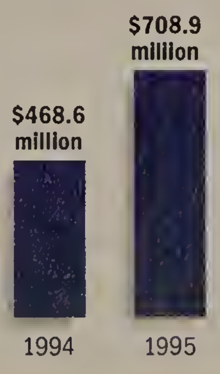
Separately, SAP AG, the parent company of SAP America, posted preliminary revenue for 1995 of $1.88 billion, an increase of 47% over 1994 revenue. Income before taxes for the year was $471 million.

**Dave Micek** has been named vice president and general manager of Texas Instruments Software, Texas Instruments, Inc.'s application development tool division.

Previously, Micek was vice president of marketing for Neuron Data, Inc.

**Informix Software, Inc.** reported 1995 revenue of $708.9 million, up 51% from 1994 revenue.

Earnings for 1995 totaled $105.3 million, compared to $66.1 million in 1994. Earnings increased 59% year over year.



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SHARED LOGIC

**Marc Myers**

# The outsourcing of your client/server applications

Microsoft Corp. and MCI Communications Corp. earlier this month announced a tempting offer: a public network service based on Microsoft software such as the long-awaited Exchange Server messaging product.

The notion of outsourcing the management, updating and deployment of application servers makes a lot of sense, given the expense of taking care of all this on your own.

With computers and the networks on which they run becoming more powerful and sophisticated every day, it is extremely hard for many companies to validate their technology choices and keep their software, hardware and networks up-to-date.

Most corporations respond by building large MIS departments that are responsible for developing new systems, maintaining existing systems and keeping up with technology as it evolves. The biggest problem with this approach is that it's extremely expensive.

One solution is to outsource the MIS department and simply put the whole problem on someone else's shoulders.

Another way to solve the problem is to break it down into smaller pieces and see what can be optimized. For example, you could break the typical business system down into client hardware, server hardware, client system software, server system software, network services and business applications. Of these components, the one that you definitely want to keep in-house is development of business applications. Whether you build or buy them, they are the heart of your corporate investment in information technology.

If you want to save some money, it makes good sense to outsource the rest of the environment, especially the production servers and the server system software.

In addition to working with MCI, Microsoft is teaming with US WEST, Inc. on such an offering. AT&T and Novell, Inc. also are partnering on such a service, and Oracle Corp. is expected to play in this area, as well.

Microsoft's deal with MCI provides a glimpse of the future: MCI will provide its networkMCI backbone network, which carries about 40% of domestic Internet traffic. Microsoft will provide Exchange Server, which integrates E-mail, group scheduling, electronic forms and groupware under a Windows NT administrative umbrella.

If all goes as planned, you will be able to call MCI in a few months and order 1,000 E-mail/group scheduling accounts for your corporation. The offering will be based on Exchange Server running atop NT servers across the MCI backbone.

Of course, there are many potential problems associated with the partial outsourcing of MIS. The biggest one is performance. If every transaction is required to run over the wire to a dedicated service provider's location, throughput could be abysmal. This will depend on bandwidth and on how far apart the provider's service centers are located.

The next big problem will be security. Will it be intelligent, or even legal, to place confidential corporate information on another company's server?

While these issues remain open, the amount of money and aggravation that will be saved through partial outsourcing should help drive the market to quick solutions.

*Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726.*

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# Electronic Commerce

**Covering:** Tools and Techniques for Interenterprise Networking
and Doing Business On-Line

## Briefs

■ **NEC Corp.'s** *newly formed Internet Business Unit next month will begin selling a $14,950 Unix-based application-layer* **firewall** *called PrivateNet that uses the Data Encryption Standard and Triple-DES.*

*NEC: (800) 668-4869.*

■ **Pipeline Communications, Inc.** *has released an electronic customer registration tool kit that lets computer and hardware vendors of Windows 95 products* **register customers on-line.** *It costs $995.*

*Pipeline Communications: (770) 612-8008.*

■ **Decisive Technology Corp.** *is adding new filtering techniques to its on-line World-Wide Web survey form for mailing* **electronic mail surveys and questionnaires** *automatically to Web site visitors. Survey 1.1, scheduled to ship in April, will let the user better organize responses for analysis and action. It does so through filters for comparing trends or by singling out specific customer requests.*

*Decisive Technology: (415) 528-4304.*

■ **Sterling Software, Inc.** *has started shipping a version of its COMMERCE:Forms* **electronic data interchange** *product for retailers and manufacturers. COMMERCE:Forms for Retail, intended to help smaller trading partners get started easily, comes with the data fields of information used in the retailing industry already filled in.*

*Sterling Software: (614) 793-7000.*

■ **Hitachi, Ltd.** *is establishing a new division in Japan to promote and develop next-generation financial systems based on* **electronic money systems,** *such as the electronic cash smart card from Mondex, Ltd.*

■ **America Online, Inc.** *is licensing First Floor Software, Inc.'s* **Smart Catalog** *technology, which will give AOL subscribers the ability to monitor their favorite areas for new information.*

## Controversy arises over encryption scheme

**By Ellen Messmer**
*Washington, D.C.*

For the first time, the U.S. government has approved a key-escrow encryption scheme developed by a private company.

The State Department and National Security Agency (NSA) have just agreed to let Trusted Information Systems, Inc. (TIS) export their encryption-capable Gauntlet firewall to the U.K.

The only rub is the requirement that a special key for unlocking any data it encrypts be stored at a designated data recovery center for use by corporate and government authorities.

Through a method called Commercial Key Escrow (CKE), developed by TIS, the Gauntlet IP-based firewall appends a special public key with the user's private-session key in scrambled form to all data encrypted with it. The matching secret key that will let someone unscramble the data is stored at a certified data recovery center.

Under the plan approved by the NSA, there will be two data-recovery centers — one in the U.K. for British authorities and the other in the U.S.

CKE could win favor with companies that have leased lines going all over the world. It will be less expensive to use the Internet and simply encrypt data through Gauntlet than to use existing leased lines, said TIS President Steve Walker.

But CKE is generating controversy. "The NSA has finally stuck a gun in everyone's face," said Robert Moskowitz, a technical support specialist at Chrysler Corp. He said corporations will not welcome governments having the opportunity to read their data.

"I can't imagine people will buy this," said cryptography expert Bruce Schneier, president of the Minneapolis-based consultancy Counterpane Systems. "I'd be amazed if any foreign country would buy a security feature that lets the U.S. government listen in. I'm really appalled."

"I don't think the market dynamics will flow [to CKE]," said Mal Raddalgoda, product marketing director at competitor TimeStep Corp. He said the IETF is completing a standard for IP encryption and key management called IPsec that will let different vendors' firewalls work together to encrypt or decrypt data. This month, IBM, Secure Computing Corp., Raptor Systems, Inc. and TimeStep demonstrated interoperability with IPsec.

But if the CKE plan works out, the software industry could add CKE, which TIS is licensing, to their products to make them eligible for mass-market export, Walker said. He said that CKE can be added to IPsec, too.

Government pressure to get access to users' encrypted data is clearly having an impact. Lotus Development Corp.'s international version of Notes, shipping this month, has added an NSA 24-bit encryption scheme to the 40-bit encryption it shipped abroad previously. Since 40-bit encryption is easy to crack, U.S. spymasters can listen in through a back door. ■

ON-LINE

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### Data recovery centers and you: the new rules

- ▶ The product's key-escrow cryptographic functions key(s) shall be escrowed with escrow agent(s) certified by the U.S. government, or certified by foreign governments with which the U.S. government has formal agreements consistent with U.S. law enforcement and national security requirements.
- ▶ Each data recovery center operated by a key-escrow agent will have at least one employee cleared for secret communications with the U.S. government.
- ▶ A corporation with many global operations could mandate that all units pick the same key-escrow center.
- ▶ Escrow-agent entities shall devise and institutionalize policies, procedures and mechanisms to ensure the confidentiality, integrity and availability of key-escrow related information.
- ▶ Escrow agents shall escrow at least two copies of any key and/or key component in independent locations to help ensure the availibility of such key and/or key component due to unforeseen circumstances.
- ▶ The Department of Justice, the National Security Agency, the Federal Bureau of Investigation, the National Security Council and the Department of Commerce are finalizing new rules that will govern how companies run data recovery centers and how vendors build encryption products for export.

**Name:** Steve Walker
**Title:** President and chief executive officer
**Company:** Trusted Information Systems, Inc.

Walker's firm developed the software-based Commercial Key Escrow (CKE) method that lets users and corporations retrieve lost encryption keys from a specified data recovery center. The U.S. government approved CKE, opening the door to mass export of encryption products as long as law enforcement can obtain keys to encrypted data.

## An insecure feeling haunts the 'Net

It's hard to feel secure on the 'Net.

With that very much in mind, Visa International, Inc. and MasterCard International, Inc. recently said they've put aside past differences and come up with a common standard called Secure Electronic Transactions (SET). The system improves the current browser-to-server encryption method, with SET encrypting credit card information all the way through the bank card-processing network.

But don't relax yet. First Virtual Holdings, which markets an Internet payment system in which credit cards are phoned in, recently demonstrated how easy it is fool encryption systems.

First Virtual's scientists have shown how a computer virus they created can swipe credit card data the second someone taps it out on the keyboard, before it is encrypted by a secure Web browser.

The company does not intend to unleash a computer virus, but it is showing how vulnerable the ballyhooed credit card encryption schemes are, said Lew Silverberg, First Virtual's senior vice president.

Any experienced programmer could easily whip out a credit card-grabbing computer virus, said cryptography expert Bruce Schneier, president of the Minneapolis-based consultancy Counterpane Systems. "The only way to reliably catch credit card fraud is through checking spending patterns, which companies like Visa and MasterCard do all the time," Schneier said.

Netscape Communications Corp. President and Chief Executive Officer Jim Barksdale referenced the debate over Internet credit card security last week in his address at ComNet '96. "No one can point to a dime that's been lost on the Internet because of credit card fraud," Barksdale said.

Encryption systems always will be subject to intense scrutiny, Schneier said. He pointed out that RSA Data Security, Inc.'s secret RC2 encryption algorithm was "outted" last week when someone anonymously posted it on the Internet for all to see.

RC2 has no obvious flaws, Schneier said. But cryptography experts are enjoying the chance to put it under the microscope.

*—Ellen Messmer*

# Web publishers get growing selection of Macintosh tools

**By Peggy Watt**

More Webmasters are choosing Apple Computer, Inc.'s Macintosh platform for their sites, and, in reward, they're getting a broader choice of tools to ease Macintosh-Internet connectivity.

A significant addition ships this week from NetManage, Inc. of Cupertino, Calif., which markets the Chameleon family of TCP/IP applications for Internet access. NetManage has produced a Macintosh version of the WinSock specification, which provides a standard interface for applications to link with TCP/IP.

"Developers will be able to write to the WinSock API, which talks directly to Mac TCP/IP or the Open Transport interface," said Fritz Mueller, Chameleon product-line manager. NetManage's WinSock Software Development Kit (SDK) for the Macintosh supports Apple's multiprotocol Open Transport 1.1, as well as the Macintosh TCP/IP bundled with the MacOS. NetManage's WinSock for the MacOS is WinSock 1.1 compliant and is being certified by the WinSock Labs operated by Stardust Technologies, Inc., which performs compatibility testing.

NetManage also is shipping this week Macintosh implementations of its Chameleon suite of Internet applications.

"Our customers wanted a full multiplatform solution," Mueller said.

Chameleon for MacOS also supports Open Transport 1.1 and uses Macintosh interface conventions for its commands, although it retains all the features of Chameleon for Windows. Host connectivity functions are provided via PacerTerm, which supports Virtual Terminal 100, 320 and 420 emulation, PC-ANSI and TCP/IP, as well as other terminal connections.

The more of these tools, the better, said one Webmaster committed to the Macintosh platform. "We're a totally Macintosh shop because of the simplicity of writing these programs," said Bill Lennan, IS director for Global Interactive, Inc. in Foster City, Calif. The company builds and runs commercial Web sites.

The firm started with Macintosh servers but has grown its fleet with 100-MHz Power Computing, Inc. Macintosh clones, Lennan said. He uses the WebSTAR server developed by StarNine Corp., which was recently acquired by Quarterdeck Corp. of Marina del Rey, Calif.

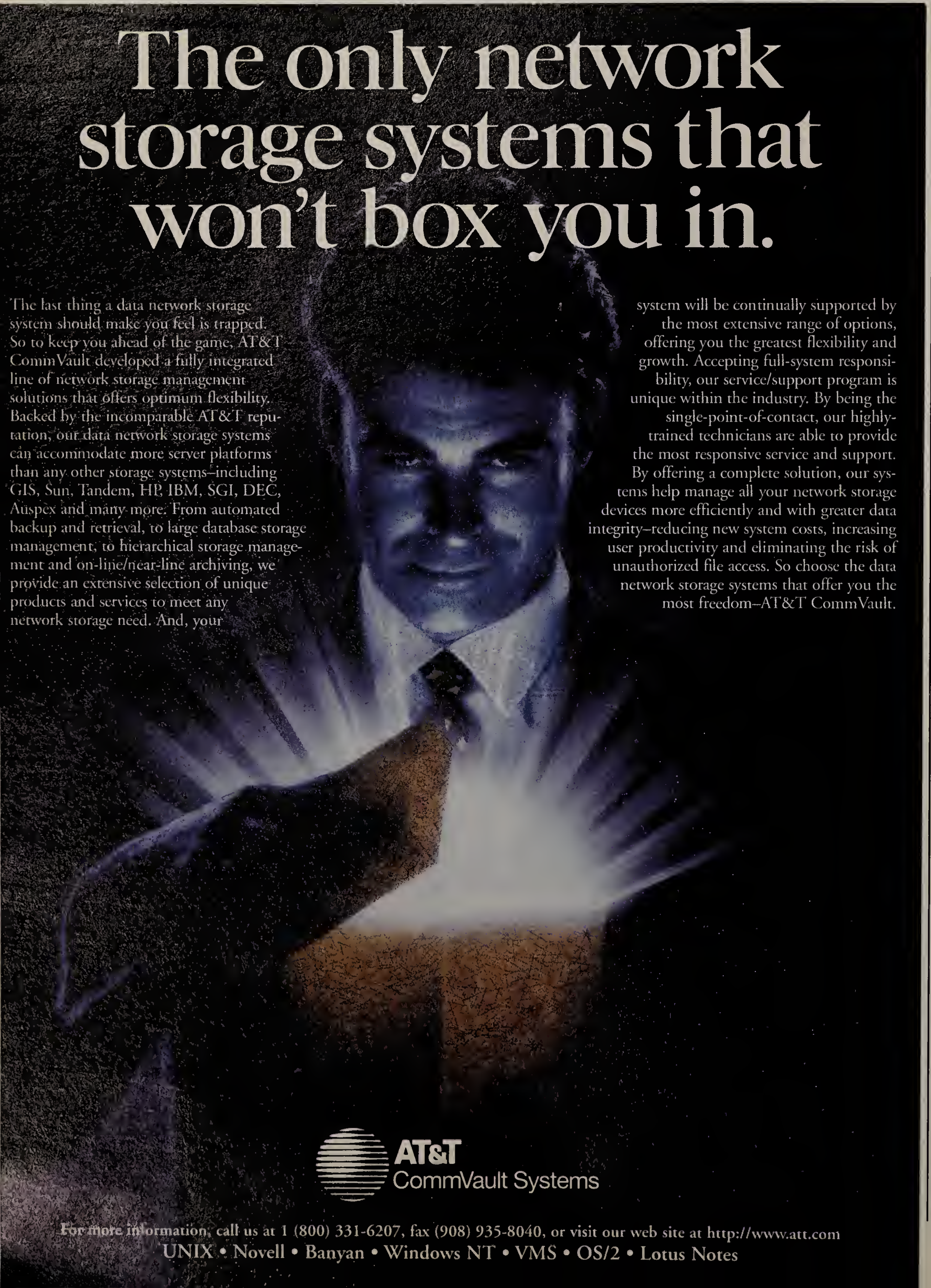
Lennan's needs are simple. "We mostly want ease of use and ease of setup," he said. He is testing the WebSTAR Commerce Toolkit, scheduled to ship this month, and is eager for its support of 'Net payment systems. The tool kit is based on the WebSTAR Secure Server and offers most payment system technologies via a Common Gateway Interface application.

Though his work generally went smoothly, Lennan had problems determining the appropriate folder hierarchy for a series of Web pages. But he found the commerce server is well suited for basic on-line transactions, especially one he is designing for a site that distributes training materials. For this application, users set up their accounts in advance and then can order on-line by using a password. Payment information is processed off-line.

The Macintosh has a few areas that need attention. For instance, Macintosh systems and software need to support more connections and multithreading so they can host Web sites with heavy traffic, Lennan said. Transaction speed should also grow, although he said communications links affect that function. "The more graphics, the more we need speed," Lennan said.

NetManage's Chameleon for the MacOS costs $295; the WinSock SDK costs $250 per license, with free distribution. Pricing for Quarterdeck's WebSTAR Commerce Toolkit will be announced on its release. The basic WebSTAR server costs $499, and the secure server is $1,095.

©NetManage: (408) 973-7171; Quarterdeck: (310) 309-3700.



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# Technology Update

Keeping Up with Network Technologies and Standards

## NETWORK HELP DESK

Network World *tracks down answers to your questions. Please submit them to Jim Brown via phone at (800) 622-1108, Ext. 408, the Internet at jbrown@nwu.com or fax at (508) 820-1103.*

**What are the differences among and the benefits of Asymmetric Digital Subscriber Line (ADSL), High rate Digital Subscriber (HDSL) and Very high rate Digital Subscriber Line (VDSL)?**

**Via Network World Fusion**

All three technologies push far greater amounts of data over twisted-pair local-loop access lines than existing techniques. ADSL is designed with three channels — one that pumps data at 6M bit/sec in one direction only, another that supports duplex communication at 640K bit/sec and one that supports plain old telephone service.

The ADSL Forum, a vendor group pushing the technology, says the technology is good for extending corporate LANs to small remote sites and will speed delivery of multimedia data over the Internet.

HDSL provides for bidirectional communication at 1.544M bit/sec, making it possible to support videoconferences and other bandwidth-hungry interactive applications over twisted-pair local-loop access lines. VDSL uses HDSL techniques to up the data rate to 10M bit/sec.

The technologies have distance limits, but each will generate signals that travel several thousand feet.

On-line Editor Adam Gaffin has assembled a series of links to sites with tutorials on the technologies. From the Network World Fusion home page, select Forum, then nwfusion.talk and Help Desk. Enter the Help Desk conference and look for Topic 30, HDSL/ADSL/VDSL.

**Be helpful**

While you're in the Help Desk conference, come to the aid of your peers. In Topic 23, NetWare to Unix/NFS Conversion, a user is looking for help in converting Novell, Inc. NetWare users to Unix and the Network File System.

In Topic 18, E-mail LAN-based and mobile, a user wants your opinion on which electronic mail application has the best administration features for a network with more than 5,000 clients.

# IP stacks or gateways can pave the NetWare-to-Internet path

**By Andrew Percy**

Given the popularity of Novell, Inc.'s NetWare operating system and the exploding interest in the Internet, it comes as no surprise that providing connectivity between the two environments has become a business imperative.

It is fairly easy to provide an electronic mail connection between NetWare and the Internet. All but the largest companies will find that a Simple Mail Transfer Protocol gateway connected to an Internet service provider via a dial-up line provides a sound bidirectional E-mail solution.

Things get trickier when users want to surf the 'Net from their desktops. This forces network administrators to balance security, administrative overhead and demand. These key factors often drive the decision behind which Internet-NetWare connectivity option a company chooses.

To go surfing, PC and workstation clients must have browser application software that can communicate with servers on which World-Wide Web pages reside. Since servers "speak" IP, clients need to do so, as well. Network administrators have two options for getting clients and servers to speak the language: They can add an IP stack to the client or an IPX-to-IP gateway to the server.

### Side by side

When considering the dual-stack approach, network administrators must be mindful of security, addressing, memory and cost considerations.

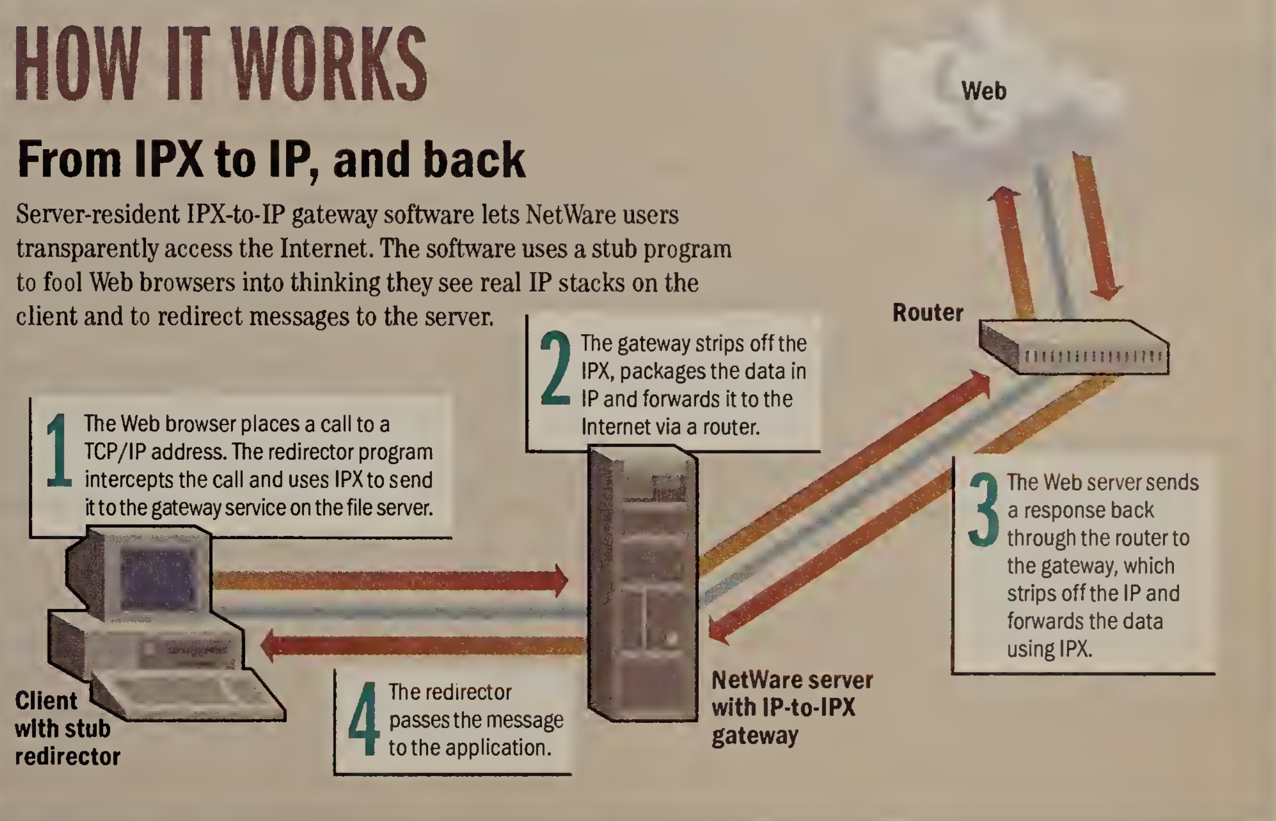
Security is an issue because the IP stack provides a direct channel from the Internet to the client and any devices to which it is attached. Firewalls can be installed to mitigate this risk, but they can be expensive. They typically cost about $20,000.

When clients are updated with an IP stack, they also must be assigned an IP address — which can be cumbersome if a network administrator is using manual configuration tables — and typically require from 1M to 4M bytes of additional memory. Relying on conventional memory alone can prevent applications from running, particularly on Microsoft Corp. DOS and Windows 3.1 clients. Finally, it can be costly to add an IP stack to every network client since licenses must be purchased on a per-seat basis.

## HOW IT WORKS

### From IPX to IP, and back

Server-resident IPX-to-IP gateway software lets NetWare users transparently access the Internet. The software uses a stub program to fool Web browsers into thinking they see real IP stacks on the client and to redirect messages to the server.


Web
Router
Client with stub redirector
NetWare server with IP-to-IPX gateway

1 The Web browser places a call to a TCP/IP address. The redirector program intercepts the call and uses IPX to send it to the gateway service on the file server.

2 The gateway strips off the IPX, packages the data in IP and forwards it to the Internet via a router.

3 The Web server sends a response back through the router to the gateway, which strips off the IP and forwards the data using IPX.

4 The redirector passes the message to the application.

### A network go-between

Alternatively, network administrators can install gateway software on the NetWare server. The gateway converts clients' outbound IPX traffic to IP and sends it to the Internet. This process is reversed for inbound traffic.

Gateways come as stand-alone services or as part of a Web server. They also can be used to give clients access to IP hosts on the enterprise network.

The benefits of an IPX-to-IP gateway are the reverse of the issues inherent in the dual-stack approach. For instance, each client does not need its own IP address or additional memory. Instead, users share a single address configured at the server.

Additionally, the gateway does not open a direct channel from the Internet to the client. And software licenses are required for only the maximum number of concurrent connections. This usually amounts to about 20% of all the clients.

An IPX-to-IP gateway fools the browser into thinking it sees a real IP stack through a small stub program. The program loads into memory enough code to fake the look of an IP stack and then redirects traffic to the IPX-to-IP gateway on the server. Because it does not provide any services itself, the stub program is much smaller than an IP software stack, typically taking up less than 10K bytes of conventional memory on a DOS/Windows 3.1 client.

The gateway on the NetWare server uses Novell's SPX protocol to communicate with the client. As a result, the number of connections used on the NetWare server does not affect the number of connections the clients have for print and file services.

For many companies, security is the greatest barrier to setting up an Internet link. But the IPX-to-IP gateway can play the role of gatekeeper for incoming Internet traffic because it is the only device loaded with IP translation software. Internet traffic can be further isolated by binding the gateway to a separate network interface card in a dedicated NetWare server. Because the gateway uses SPX, a five-user copy of NetWare will suffice.

The gateway runs as a NetWare Loadable Module so it can leverage the NetWare user database, either Bindery in NetWare 3.X or NetWare Directory Services in NetWare 4.X. This lets the network administrator centrally configure rights that allow users to access specific Internet services or sites. This is a unique benefit of the gateway approach.

While a dual-stack implementation is a workable option, an IPX-to-IP gateway provides an easier way to add Internet access to a NetWare network. It causes fewer issues at the client level, offers centralized administration and leverages the network directory.

*Percy is chief technology officer at San Jose, Calif.-based Edge Information Systems, one of the nation's top 30 network integrators. E-mail him at apercy@edgeis.com.*

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### EDITORIAL INSIGHTS

## *Novell must grab the intranet market*

The high point of the Novell calendar year is approaching — the annual BrainShare confabulation — and Novell has a rare opportunity to imbue in customers, as well as the rest of us, a new sense of confidence in the company's future.

For Novell has a golden opportunity to control perhaps the most important IT arena of the future — the intranet market. Novell has the technology and the installed base to be one of the principal players, if not the leader, in the intranet world.

It has a chance — perhaps not to be repeated again — to get out of the glare of Microsoft's headlights and reestablish itself as a shaper of the network industry.

Novell's chief asset today is its installed base of servers. On those servers reside vast stores of corporate data and documents that companies need to make more easily available. That is the failed promise of client/server. Despite all our client/server expenditures, it remains too difficult to get at information in different databases and applications.

Intranets represent an easier, less costly way of opening up that information to users. If Novell can help its still-loyal customers build those intranets, it will speed adoption of NetWare 4 and NetWare Directory Services (NDS), blunt the thrust of Windows NT and remove the battle from the operating system level where Microsoft has all the advantages.

Those aren't NT databases, files and applications out there; they reside under the control of NetWare. If Novell can give customers the migration path to the intranet world, it will solidify its weakening account control.

Novell must act now to bundle its products in ways that make it easy and cost-effective for customers to turn existing NetWare 3.X servers into intranet servers. Such clearly branded intranet offerings could start with an upgrade package that includes NetWare 4, NDS and NetWare Web Server software. A higher level intranet package could include GroupWise, which now supports access from Web browsers, and a small business package might be offered with AT&T NetWare Connect Services to help companies link remote sites.

Novell must again seize the mantle of openness that it built its early success on and make NetWare the best intranet server for any browser or client. It must quickly deliver tools for supporting transactions and secure communications over intranets, as well as tools for building and managing intranet applications.

Forget the Internet. Every vendor is claiming to be an Internet vendor these days. The real money to be made is in intranets. Even Netscape, the most Internet of all Internet companies, makes most of its money supporting corporate intranets.

As yet, few vendors are sounding the intranet message, so Novell has a chance to trumpet it loud and clear — before the enterprise-hungry Microsoft does. Forget NetWare everywhere, forget the billion NetWare devices, forget the NEST-enabled toasters. Those concepts are ethereal and mean little to customers struggling with the realities of client/server.

Novell has to champion the browser as universal client to NetWare-based intranet servers. It must make NDS the gateway to files, documents and other resources on intranet servers and the broader Internet — in short, make NDS the focal point for intranet-based collaboration.

Novell can't cloud the message by trying to market NDS separately — Banyan knows that's too difficult a sell — or forcing GroupWise or client software on customers. Those sales will come later if Novell can steal the intranet market before Microsoft delivers a strong 'Net server product or directory.

While Novell has its most loyal customers gathered at BrainShare, it has to deliver the intranet gospel. Novell simply may not get another chance like this one.

*John Gallant, editor in chief* jgallant@world.std.com

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### THE BLUE VIEW

## ATM workgroup switching may not be able to lure users from fast Ethernet

**Anura Guruge**

IBM's 25M bit/sec 8285 Nways ATM Workgroup Switch, unveiled at Com-Net '96, has the potential to jump-start Big Blue's campaign to dominate the ATM market.

The 8285 signals IBM's deviation from its original end-to-end Asynchronous Transfer Mode strategy in favor of a more opportunistic, low-cost ATM solution. Whether users will find the lure of 25M bit/sec ATM to be stronger than that of switched fast Ethernet remains to be seen.

The shift in IBM's ATM focus was evident from the fact that the 2220 Nways Broadband Switch, hitherto the jewel in IBM's ATM crown, was not mentioned in this last round of announcements. In terms of price and capacity, the 2220 switch, which can be used to implement frame relay or ATM backbones, is at the opposite end of the solutions spectrum from the 8285. The debut of the 8285 appears to signal that, for the short term, IBM is going to focus on the low end of the ATM market while it waits for the big ATM wave to finally pick up steam.

*The debut of the 8285 appears to signal that, for the short term, IBM is going to focus on the low end of the ATM market while it waits for the big ATM wave to finally pick up steam.*

The 8285, along with a similar 25M bit/sec workgroup switch Bay Networks, Inc. announced a few weeks ago, reopens with a vengeance the controversial debate regarding whether users should go with 25M bit/sec ATM rather than LAN switching solutions. I have always maintained that 25M bit/sec ATM should live or die based on the most fundamental and powerful of market appeal criteria: price/performance ratio.

In terms of price, IBM's 8285 is a big improvement over its previous 25M bit/sec ATM workgroup solution. Previously, users had to buy an ATM switch, an ATM adapter costing $395 and IBM's 8282 Workgroup Concentrator. The new solution lowers users' costs by combining the 8282 and ATM switch into one product — the 8285 — and slashing the price of the adapter card to $295.

Nevertheless, 25M bit/sec ATM switching is still relatively expensive. The per-port cost of the 12-port 8285 is $583. Add to this $295 for the ATM adapter, and a switched 25M bit/sec port costs $878 per user. (IBM, however, is offering a promotional price of $495 per port, including an adapter, though it's not clear how long this price will be available.)

For roughly the same price, switched fast Ethernet solutions are available that offer four times the bandwidth for data-only applications, provided the correct wiring is already in place. Understandably, many IBM users are currently captivated by fast Ethernet. The 8285 may not be cost-competitive enough to change this.

IBM further muddied the waters by announcing, at the same time as the 8285, a $199 fast Ethernet adapter for use in full- or half-duplex mode with IBM's 8271 Ethernet Switch. This highlights IBM's intention to back both horses — fast Ethernet and 25M bit/sec ATM — and leave it up to users to decide between them.

The redeeming feature of 25M bit/sec ATM is that it can be used with older PCs with ISA buses and across Category 3 unshielded twisted-pair wiring. Thus, it can provide users with a taste of ATM with minimum disruption to their current networks and without the cost of having to upgrade PCs and wiring.

Many industry observers, however, consider 25M bit/sec ATM to be an interim, tactical solution.

Users that choose 25M bit/sec ATM today are doing so just to get additional bandwidth for LAN-centric data applications and will, in time, migrate to higher ATM speeds as they upgrade equipment and ATM costs fall. It is this temporary nature of 25M bit/sec that makes it continually vulnerable to the threat of fast Ethernet and even token-ring switching. Both of these can also claim to be interim solutions until 155M bit/sec ATM options become available.

The 8285 also bumps up against the traditional LAN switching sector — a market that IBM has been pursuing vigorously with its 827x LAN switches and the Centillion 100 Token-Ring switch it sells under an OEM agreement with Bay Networks. Leading token-ring switch vendors Bay Networks, Cabletron Systems, Inc. and Nashoba Networks, Inc. will attest that, in marked contrast to the Ethernet market, workgroup switching currently is not a hot area in the token-ring market; backbone interconnection and LAN segmentation are. Thus, the demand for the 8285 may initially come from the Ethernet base rather than IBM's traditional token-ring base.

There is also the issue of how the 8285 interoperates with token-ring switches. Ideally, the 8285 should have had one or more switched token-ring ports, which would have allowed it to neatly augment token-ring switching. Now the prerogative of delivering a switch with both 25M bit/sec ATM and token-ring ports falls to Nashoba Networks, which has been talking about such a switch for a while and is likely to announce it prior to NetWorld+Interop 96 in April.

In the interim, IBM's solution, which involves the $16,000 8281 ATM LAN Bridge, is too expensive to be effective.

With the 8285, IBM has made 25M bit/sec ATM more cost-effective and, hence, more attractive. The question is whether it will appeal to users more than fast Ethernet. Interoperability with token-ring switching would have helped the 8285 here. But in its absence, fast Ethernet, not 25M bit/sec ATM, is likely to become a siren call to the IBM networking community.

*Guruge is an independent consultant specializing in internetworking and IBM network architectures. He can be reached at (603) 878-1303 or via the Internet at aguruge@mcimail.com.*

REGULATORY REFORM

# Telecom Act bodes well for users — if they remain vigilant

**Alan Pearce**

The U.S. Congress has always had a powerful — and generally positive — influence on the telecommunications industry. Now the Republican-led 104th Congress — challenged and encouraged by the Clinton-Gore vision of a national (and global) information infrastructure — has created a defining moment in the industry's history by passing the Telecommunications Act of 1996.

The new law actively encourages competition, consolidation, convergence, cooperation and consumer power. Although some of this alliteration appears to be contradictory, it isn't.

There will be more competition in every segment of the telecommunications industry: local and long-haul, wired and wireless telecommunications services; information and database access services; electronic mass media; and equipment manufacturing.

There will be more consolidation as players position themselves to offer a wider array of services in order to survive in an increasingly competitive market. Convergence is already under way, spurred in part by the original Communications Act of 1934, technology and the demands of consumers.

There will be more cooperation among industry players concerning standards, rules of interconnection, number portability and global servicing arrangements. And consumers will be king at last: They will have more vendors in every market segment attempting to please them with more attractive services, software-rich equipment options and enhanced reliability — all at lower prices.

But passage of the act is just the beginning. The Federal Communications Commission will now launch a number of critical rulemakings that will shape the industry's future competitive structure over the next three to five years. Users should participate in these rulemakings, the most important of which concern local and long-haul competition, telephone company-cable television cross-ownership, infrastructure sharing, equipment manufacturing and universal service.

In addition to the plethora of rulemaking proceedings, there is also the critical question of whether a downsized and budget-pinched FCC is up to the task of quickly and fairly establishing as well as refereeing the new rules of the game. The Republican-controlled Congress has reduced FCC staff by 10% and slashed its budget from around $220 million annually to $166 million. House Speaker Newt Gingrich (R-Ga.) has even talked about doing away with the FCC.

> *The debate is already under way as to who are the winners and losers under the new telecom bill. It seems clear, however, that users will end up among the winners.*

Clearly, if the FCC is to do its critically important job following the enactment of this landmark legislation, Congress must contain its budget-slashing zeal, stop this nonsense about eliminating the FCC and give the commission the resources it needs to promote and enforce the new rules. Consumers and the smaller, emerging competitors have the biggest stake in a revitalized and vigorous FCC.

The debate is already brewing as to who are the winners and losers under the new telecommunications bill. It seems clear, however, that users will end up among the winners — they will have more competitors pandering to them in every branch of the business, more choice in service and equipment offerings, and lower prices.

Nevertheless, users would be wise not to become too complacent about the future. They must continue to monitor the FCC rulemakings and actively participate in them. In the final analysis, the only ones who will truly look out for customers are the customers themselves. This will be just as true in a highly competitive environment as it was in the old days of monopoly.

*Pearce is president of Information Age Economics, Inc., a telecommunications research firm in Washington, D.C. He can be reached at (202) 466-2654.*

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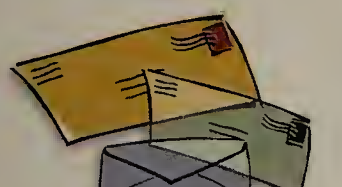

# IN-BOX

## Lessons from the past

I am a Jew and a child of Holocaust survivors. When I saw the reference to The Simon Wiesenthal Center at the top of your Jan. 15 issue, I immediately turned to that article to find out what was going on. Judging by the quote you printed, it seems that the center has fallen prey to the latest fashions in political correctness.

It distresses me to see that Rabbi Cooper and his associates at the center have so badly lost their focus and now simply parrot the denunciations of the repressive Left.

My grandparents were murdered by the National Socialists at Auschwitz and Buchenwald. My son carries the name of a relative gassed at Auschwitz in 1943. My parents survived Auschwitz and Bergen-Belsen. The premeditated crimes against my family could only have been committed because of the National Socialists' control of the information systems.

In his book, *Chernobyl*, Frederik Pohl has a character point out how the Jews of Kiev who were being rounded up to be murdered at Babi Yar had no idea of the fate that awaited them because the Soviet Union had suppressed the information about the anti-Semitic character of the National Socialist German Workers Party due to the Hitler-Stalin Pact of 1939.

*Oscar Kirzner*
*Tulsa, Okla.*

## One bad Apple

Regarding your editorial "Apple's real problem" (Jan. 22, page 40):

Apple's real problem is that it has best-of-class technologies in an industry where least-common-denominator products offer seemingly limitless job security to corporate IS managers.

I sense that the opinions in your editorial are based more on the vicissitudes of analysts than actual product usage and comprehensive evaluation.

Apple's technologies, viewed in an objective light, are very impressive. They include PowerPCs that run Excel faster than Pentium computers; Pippin, a $500 Netscape-ready box; and the Newton, a great field data tool with wire-line and wireless networking built-in. (A World-Wide Web browser is already available, and look for complete TCP/IP support this spring.)

Also, the MacOS is finally being licensed — admittedly, still on a limited basis — and you can buy excellent MacOS computers from companies other than Apple. Those are some pretty hot things, all told, and I didn't see them reflected in your insights. Nor are they available from any other company.

*Joe Pezzillo*
*Boulder, Colo.*

I have felt for years that Apple really dropped the ball by not picking up on the clues that networking was needed.

When I was in high school in 1981, we got a lab full of Apple Macintosh computers. When the teacher wanted to give everyone a

*See* **In-box,** *page 40*

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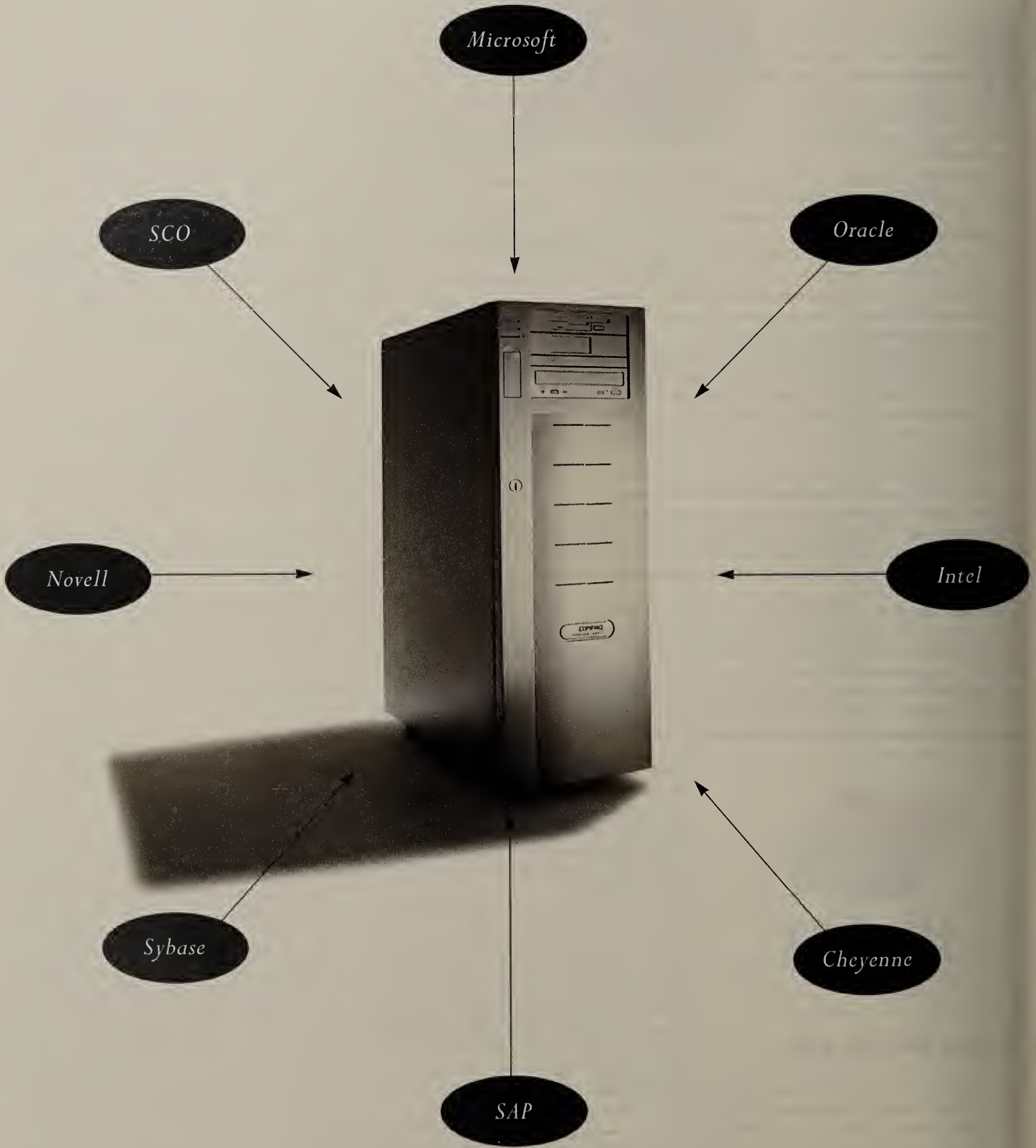

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COMPAQ

Has It Changed Your Life Yet?

## In-box

*Continued from page 37*

particular software program, she had to go machine to machine. She said back then that there should be a way to get them all connected. I thought so too. But if Apple wasn't going to do it, who would?

Apple deserves all the market share it can lose. I've been trying to network Macs for two years and haven't come up with a solution that isn't kludgy and unstable.

Bye-bye Apple. We won't miss you!

*Alan Downs*
*Network systems engineer*
*ValCom More Than Computers, Inc.*
*Middleton, Wis.*

All of Apple's problems stem from its closed architecture philosophy. IBM was smart — it released the design for the PC to the electronics community, which had a heyday designing and marketing peripherals. Texas Instruments, Inc. tried to market personal computers in the mid-1980s and failed for the same reason Apple is.

Apple is around today only because it flooded the schools with free machines and parents of students bought what their children were using in school. If Apple hadn't done that, the company would be another goner like TI.

Apple has always been an ostrich in the field of computing. When companies were banding together to form industry standards, Apple kept sticking its head in the sand and doing everything its own way.

The "I'll-do-it-my-way" attitude in the fast-paced, ever-changing computer industry is a death warrant.

*Todd Pearce*
*Plano, Texas*

## Why the 'Net is lame

I totally agree with Mark Gibbs' column "The truth must be told: The 'Net is lame" (Jan. 15, page 33). I'm fairly new to the 'Net, but already I've developed some real dislikes. Among them:

1. Sex, sex and more sex. Yes, the First Amendment allows this, and yes, I can look the other way, but I get tired of people who can't confine their fetishes to their own bedrooms.

2. Computer geeks. I was on an Internet Relay Chat channel whose topic is supposed to be directly related to my job when the participants started comparing how many Unix shell accounts they each had. Get a life!

3. "Star Trek" everywhere. You can't go anywhere on the 'Net without running into some sort of geeky reference to Vulcans or Klingons.

4. Unix and URLs. Who thought it was a good idea to throw a tilde character (and all the other gobbledygook that Unix seems to relish) at people who just want to download a file? Can't people just name a subdirectory something intelligent? Can't servers and operating systems allow administrators to remap directories to make them a little more user-friendly?

5. No phone book. I've forgotten my friend Mary's electronic mail address and phone number. Why can't I just let my fingers do the walking?

6. Bob's (or Joe's or Randy's, and so on) home page. Frankly, I don't care what CDs Bob has or what he looks like. Except to satisfy his ego, why is he clogging up the 'Net with this lame tripe?

7. Bob's (or Joe's or Randy's . . . ) resume. Why not just hold out a tin cup and beg on the street?

8. Enormous links. I've dialed up using a 14.4K bit/sec modem. What makes you think I'm going to download your 15M-byte video?

After I've waited the three hours and paid for my Internet service provider's new Mercedes, I'll bet the video is just as lame as the next one.

9. No returns. If a site invites me to provide input, I want some feedback. Did you get my message? Does my idea have merit? If not, why not? If I reported a problem, could you at least say, "Thank you," or "We're looking into it," or better yet, "Here's how you fix it?" I hate people who don't return phone calls, and I hate people who don't return E-mail even more.

10. Asking for my personal information. There are sites that ask for all the information about my checking account so that the site administrators can automatically withdraw money from it to pay

*See* **In-box**, *page 42*

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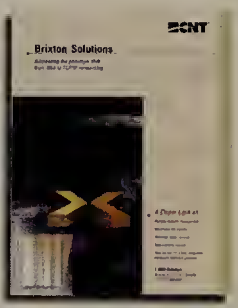

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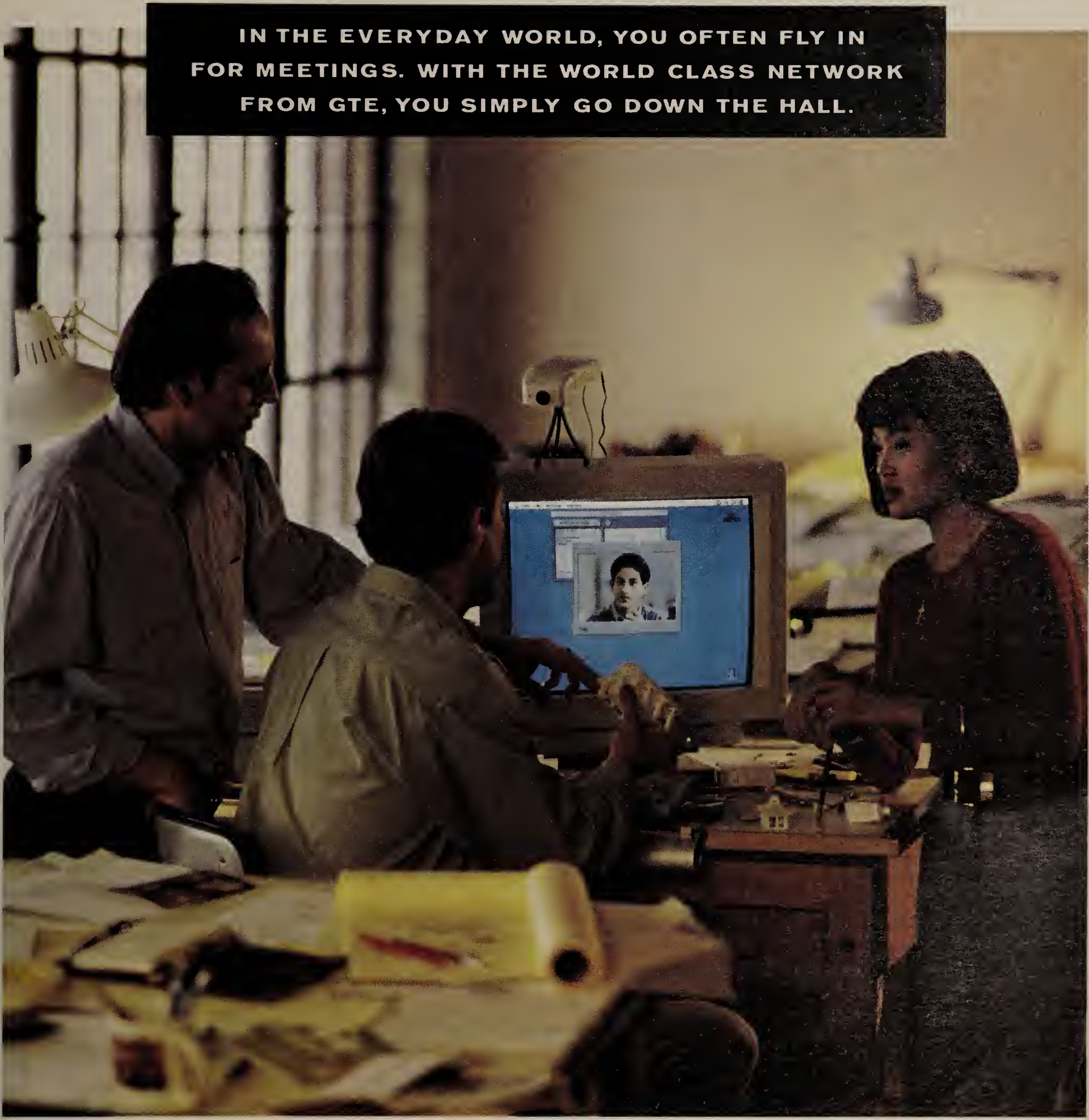

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Circle Reader Service #**37**

## In-box

*Continued from page 40*

for their software (which I'm not even sure I want yet).
*Duston Suits*
*Springfield, Ill.*

The real problem with the 'Net is that people expect a 20-year-old technology to provide the "oomph" of a 1990s multimedia experience. It can't.

I've been using the Internet and Usenet newsgroups for seven years. They serve my needs today just as well as they always have. With File Transfer Protocol, I can acquire public-domain software for my PC Unix box, some of which is written by the best programmers on the planet.

Usenet has always been a crapshoot. One must thresh any golden nuggets of wisdom from considerable chaff. I have learned that Usenet, in many ways, mimics reality: Most people don't know what they're talking about but, nevertheless, enjoy hearing themselves speak. Print, even the electronic kind, endows even the most purile ramblings with authority. However, if you're willing to tolerate the signal-to-noise ratio, one can occasionally get technical questions answered quickly by knowledgeable people who enjoy their subject. This is enough reason to redeem Usenet in my mind.

The current 'Net luge ride reminds me of the 1970s' CB radio craze. Everyone ran out to buy a box that would plug them into a greater community. Eventually, the shine wore off, and most people realized they were no better off than they were before and, in fact, their wallets were a bit lighter. The network revolution will have far-reaching benefits for everyone, eventually. It's not completely lame; it's just not ready for prime time.
*Michael Borowiec*
*Senior member of technical staff*
*Tellabs Operations, Inc.*
*Lisle, Ill.*

Gibbs' column was on target. I have recently connected my company's corporate LAN to the 'Net, and the overhead involved in finding useful information is often maddening. The dead ends, outdated pages and lame advertising make the Internet a difficult place to find answers. I also think the productivity of those given Internet access has probably decreased due to the allure of the dark side of the Web.
*Mike Jones*
*Mobile, Ala.*

I view the 'Net as a place to relax and enjoy. All the stuff people claim it has to offer is just plain overhyped. I suspect that in the next two to three years, the 'Net will become something better.

Technology will expand, and on-line service providers will get the hint about what is useful and what is just plain garbage. It will take time, but this public utility will evolve into a useful domain for just about everybody.

I surf the 'Net from time to time and find neat stuff like images from the Hubble space telescope and the Sci-Fi channel's home page. Anything more extensive is just too time-consuming (even at 28.8K bit/sec).
*Joseph Sosville*
*Oxford, Mich.*

No, the 'Net is not as much fun as Nintendo. If you refer to its original intent, you will realize that it was not meant to be entertaining.

The Internet was created as a means for researchers to share information and, thereby, further expand research capabilities.

Now, at its best, it's an OK substitute for a public library. You can't rely on information because of the infrequent updates, and the search vehicles are useful about 15% of the time.

And yet, if you are willing to put up with all the rest, I have found the Internet to be a great source for interesting new poets and writers, as well as a place to find information that the newsgroups haven't gotten around to. I've been able to plan a trip across the country using public transportation, find great vegan recipes and track my family's genealogy — and that's not all that lame.
*Lisa Wodis*
*Grants and contracts coordinator*
*The Field Museum of Natural History*
*Chicago*

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Buyer's Guide

# Here comes the superhub

JAMES YANG

*Now able to integrate switching, routing and other key functions, high-end hubs are heading for the data center.*

**By Glenn Gabriel Ben-Yosef**

Bulging from a bevy of advanced features, high-end hubs are bursting out of the wiring closet and muscling their way into the data center, where they are becoming the key mechanism for configuring and managing both shared and switched LANs.

Now penetrating the market in mass quantity after years of development, these superhubs give you the opportunity to integrate everything from 10Base-T and token ring to Asynchronous Transfer Mode, 100M bit/sec LANs, switching, routing and an array of other technologies.

The port-switching capabilities found in nearly all of these high-end hubs, combined with the large number of ports — over 500 in some cases — make it possible to manage virtual LANs across the enterprise from one box as opposed to using a plethora of stand-alone devices. While VLANs currently rely on vendor-specific software, the port-switching feature of superhubs allows you to include a mix of shared and switched nodes if VLANs are in your game plan. That's a big plus for large organizations with an increasingly mobile user base.

Superhubs employ a high-speed backplane — usually exceeding 1G bit/sec — to interconnect various interface and functional modules. Management modules make it possible to configure and control net operations via software from an operator's console. Other modules provide application-level services such as file and print sharing, as well as protocol conversion and gateway connections.

SynOptics Communications, Inc., now part of Bay Networks, Inc., was among the first out with a high-end chassis back in September 1993 with the System 5000.

Chipcom Corp., which was recently gobbled up by 3Com Corp., put its ONcore Multifunction System on the market by mid-1994, roughly about the same time Cabletron Systems, Inc. delivered its Multi Media Access Center-Plus (MMAC-Plus).

Soon after, other vendors began to populate the market. Alantec Corp., which is being bought by Fore Systems, Inc., hit the streets with its PowerHub. So did LANNET Communications, Ltd. with its LANswitch LET, which is now owned by Madge Networks, Inc. Whittaker Communications acquired Hughes LAN Systems, Inc. and its Enterprise Hub. Not to be outdone, Optical Data Systems, Inc. entered the market with its Infinity Intelligent Switching Hub.

**SCANT SNMPv2 SUPPORT**

**IBM, Optical Data and Whittaker are the only companies listed in the Buyer's Guide chart on page 44 offering SNMPv2.**

Early on, those chassis supported a myriad of shared LAN technologies such as Ethernet, token ring and FDDI. Their port-switching capability was big news, giving the products the ability to move end users from one LAN to another on the shared or switched backplane via software commands instead of physically plugging wires into different modules.

Their high port density, fault tolerance and flexible network configuration made them attractive if you had to control a large number of connections. Their high-bandwidth, multiple-segment backplanes made it possible to collapse many low-end hubs into one box.

Today, most superhubs have modules that provide at least an uplink to a stand-alone ATM switch, if not some level of ATM switching, in addition to 100M bit/sec LAN support, integrated LAN switching and routing. Fully populated superhubs support in excess of 500 ports of mixed-media, shared and switched connectivity in a software-manageable, fault-tolerant and hot-swappable chassis that can cost over $100,000.

You know that a technology viewed as strategic today may be considered tactical tomorrow. Therefore, you will need to closely examine backplane architecture, chassis capacity, available modules and management issues as you sift through vendor offerings. Here is a rundown of what to look for.

## High-end chassis-based hubs

| Company | Product | Max. slots | Backplane architecture |  |  | Max. ports per LAN type |  |  |  |  |  | Specialized modules |  |  |  |  |  |  |  | Virtual LAN support |  |  |  | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | Type | Traffic type | Backplane speed (bit/sec) | 10M bit/sec Ethernet | 100M bit/sec Ethernet | 4M and 16M bit/sec token-ring | ATM | FDDI | LocalTalk | Bridge/router | Communications server | File/application server | Gateway and server | Protocol translator | SNA connectivity | Terminal server | WAN interfaces | IP address | MAC address | Module | Port | Price range/ Warranty (months) |
| Alantec Corp.<br>(800) 252-6832 | PowerHub | 10 | Shared memory | Packet | 1.6G | 456 | 54 |  | 4 | 80 |  | ✔ |  |  |  |  |  |  |  | ✔ |  | ✔ | ✔ | $9,950-$100,000/12 |
| Bay Networks, Inc.<br>(800) 822-9636 | System 3000 Modular Hubs | 12 | Shared bus | Packet | 382M | 264 |  | 132 |  | 44 |  | ✔ |  |  |  |  | ✔ | ✔ | FR, SMDS, T-1 |  |  |  |  | $6,690-$22,035/12 |
|  | **System 5000 Switching Hubs** | **14** | **Shared bus, switched** | **Packet** | **3.2G** | **312** |  | **312** | **16** | **78** |  |  | ✔ |  |  |  |  |  | **FR, FT-1, T-1, T-3, SMDS** |  | ✔ | ✔ | ✔ | **$8,790-$54,425/12** |
| Bytex Corp.<br>(508) 366-8000, Ext. 260 | Model 7760 | 17 | Shared bus, switched | Crosspoint | 3.2G | 144 | 24 (1) | 144 | 4 (1) | 6 (1) |  | ✔ (1) |  |  |  | ✔ (1) |  |  | ATM (1) | ✔ (1) | ✔ (1) | ✔ | ✔ | $5,295-$28,650/13 |
| Cabletron Systems, Inc.<br>(603) 332-9400 | MMAC-FNB | 8 | Shared bus | Packet | 650M | 183 |  | 168 | 7 | 63 | 168 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | FR, FT-1, T-1, T-3, SMDS | ✔ | ✔ | ✔ | ✔ | $1,700-$35,000+/3 |
|  | **MMAC-Plus** | **14** | **Shared bus, switched** | **Packet, proprietary cell** | **4G** | **504** |  | **336** | **168** | **168** |  | ✔ |  | ✔ | ✔ |  | ✔ |  | **FR, FT-1, T-1, T-3, SMDS** | ✔ | ✔ | ✔ | ✔ | **$5,000-$50,000+/3** |
| Centillion business unit of Bay Networks, Inc.<br>(800) 822-9638 | Centillion 100 | 6 | Switched | ATM cell, packet | 3.2G | 88 |  | 24 | 12 |  |  |  |  |  |  |  |  |  |  |  |  |  | ✔ | $8,490-$47,765/12 |
| Digital Equipment Corp.<br>(800) 457-8211 | DEChub 900 MultiSwitch | 8 | Shared bus, switched | Packet | 3.2G | 256 |  | 192 |  | 128 |  | ✔ | ✔ |  |  |  |  | ✔ | FR, FT-1, T-1, X.25 |  |  |  | ✔ | $3,990-$60,000/12 |
| IBM Corp.<br>(800) 426-2255 | 8260 Nways Multiprotocol Switching Hub | 17 | Shared bus, switched | ATM cell, packet | 7.2G | 576 |  | 320 | 56 | 58 |  | ✔ | ✔ |  |  |  | ✔ | ✔ | FR, T-1 |  |  | ✔ | ✔ | $9,965-$78,610/12 |
| Madge Networks, Inc.<br>(800) 876-2343 | LANswitch LET-10 | 5 | Shared bus, switched | Proprietary cell | 1.3G | 120 | 5 | 50 |  | 40 | 80 | ✔ |  |  |  |  |  |  | FR, SMDS, T-1, E-1, X.25 |  |  | ✔ | ✔ | $5,770-$30,335/12 |
|  | LANswitch LET-20 | 10 | Shared bus, switched | Proprietary cell | 1.3G | 240 | 10 | 100 |  | 40 | 160 | ✔ |  |  |  |  |  |  | FR, SMDS, T-1, E-1, X.25 |  |  | ✔ | ✔ | $5,770-$30,335/12 |
|  | LANswitch LET-36 | 18 | Shared bus, switched | Proprietary cell | 1.3G | 384 | 16 | 160 |  | 64 | 256 | ✔ |  |  |  |  |  |  | FR, SMDS, T-1, E-1, X.25 |  |  | ✔ | ✔ | $5,770-$30,335/12 |
| NetWorth, Inc.<br>(800) 544-5255 | Series 6000 Network Services Chassis | 10 | Shared bus | Proprietary cell | 300M | 240 |  | 120 |  |  |  |  |  |  |  |  |  |  |  | ✔ | ✔ | ✔ | ✔ | $4,495-$24,000/12 |
|  | Series 6000 Remote Power Base | 3 | Shared bus | Proprietary cell | 300M | 72 |  | 36 |  |  |  |  |  |  |  |  |  |  |  | ✔ | ✔ | ✔ | ✔ | $3,995-$10,000/12 |
| Optical Data Systems, Inc.<br>(214) 234-6400 | Infinity Intelligent Switching Hub | 12 | Shared bus, switched | ATM cell, packet, proprietary cell | 10G | 576 | 24 | 384 | 96 | 108 |  | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | FR, FT-1, T-1, T-3, SMDS | ✔ | ✔ | ✔ | ✔ | $10,740-$287,735/12 |
| 3Com Corp.<br>(800) 638-3266 | LANplex 6004 | 4 | Shared bus | Packet | 300M-5.8G | 48 | 1 | 24 | 1 | 37 |  |  |  |  |  |  |  |  |  | ✔ | ✔ | ✔ | ✔ | $24,400-$100,000/3 |
|  | LANplex 6012 | 12 | Shared bus | Packet | 300M-19.2G | 76 | 5 | 88 | 5 | 134 |  |  |  |  |  |  |  |  |  | ✔ | ✔ | ✔ | ✔ | $24,400-$100,000/3 |
|  | LinkBuilder MSH | 11 | Shared bus, switched | Packet | 2.6G | 240 |  | 108 |  | 36/54 (2) |  | ✔ |  |  |  |  |  |  |  |  |  |  |  | $6,695-$30,895/12 |
|  | **ONcore Multifunction System** | **17** | **Shared bus, switched** | **ATM cell, packet** | **10G** | **576** |  | **320** | **168** | **64** |  | ✔ | ✔ |  |  | ✔ | ✔ | ✔ | **ATM, FR, FT-1, T-1, SMDS, X.25** |  |  |  | ✔ | **$44,424-$127,795/12** |
| UB Networks, Inc.<br>(800) 777-4526 | GeoLAN/100 | 11 | Shared bus, switched | Packet | 10M-320M | 240 |  | 240 | 5 (3) | 58 |  | ✔ | ✔ |  |  |  | ✔ | ✔ | FR, FT-1, T-1 | ✔ | ✔ | ✔ | ✔ | $4,950-$72,999/12 |
|  | GeoLAN/500 | 17 | Shared bus, switched | ATM cell, packet | 80M-40G | 264 |  | 264 | 5 | 64 |  | ✔ | ✔ |  |  |  | ✔ | ✔ | FT-1, T-1 | ✔ | ✔ | ✔ | ✔ | $10,900-$84,925/12 |
| Whittaker Communications<br>(800) 395-5267 | Enterprise Hub | 14 | Shared bus, switched | ATM cell, packet | 1.6G | 336 | 112 | 224 | 24 | 84 |  | ✔ |  |  |  | ✔ |  | ✔ |  |  |  |  | ✔ | $9,000-$19,975/12 |
| Xyplex, Inc.<br>(800) 338-5316 | Network 9000 Hub | 15 | Shared bus, switched | Packet | 8.4G | 352 | 14 | 168 | 14 | 84 |  | ✔ | ✔ |  | ✔ | ✔ |  | ✔ | FR, FT-1, T-1, ISDN |  |  | ✔ | ✔ | $3,685-$100,000+/36 |

**Product names highlighted in color were selected for the Short List.**

Chart compiled by Kathy Scott

Footnotes:
(1) Supported by Enterprise LAN Switch. (2) 36 fiber and 54 copper. (3) Ports provide uplinks to ATM switches. FT-1 = Fractional T-1 FR = Frame relay

**On the backplane**

First and foremost, you should focus on products with a next-generation time-division multiplexing (TDM) cell-based backplane, specifically ones that use ATM. Superhubs have the capacity and reliability to serve as edge devices in ATM networks, connecting packet-switched and cell-switched technologies.

Since a high-end hub investment is no trivial affair, you will want the device to be able to support ATM as your network inevitably moves in that direction. Make sure the vendor you select is committed to ATM development and partnerships.

Also, the scalability and upgradability of the hub backplane should be in sync with your network migration plans. You will want a backplane to be able to adapt to new technologies as they emerge.

A multisegment backplane may be suitable for installations with a large number of shared LAN segments.

However, a TDM-based backplane removes the ceiling on the number of LANs you can configure, as long as you outfit it with the appropriate modules.

NetworkWorld Short LIST

## High-end hubs

*The Short List highlights products* Network World *recommends you closely examine when purchasing high-end hubs. Products mentioned here offer some of the strongest features in this market and may suit the needs of users with multivendor enterprise networks. Your needs may differ.*

As the first superhub shipped, **Bay Networks, Inc.'s System 5000** supports the highest number of Ethernet LANs among the products on this Short List. In fact, the 14-slot System 5000's multisegment backplane can support up to 26 LANs — 12 Ethernets, nine token rings and five FDDI. Furthermore, you can use Bay's smaller Distributed 5000 in wiring closets and connect them back to a System 5000 in the data center.

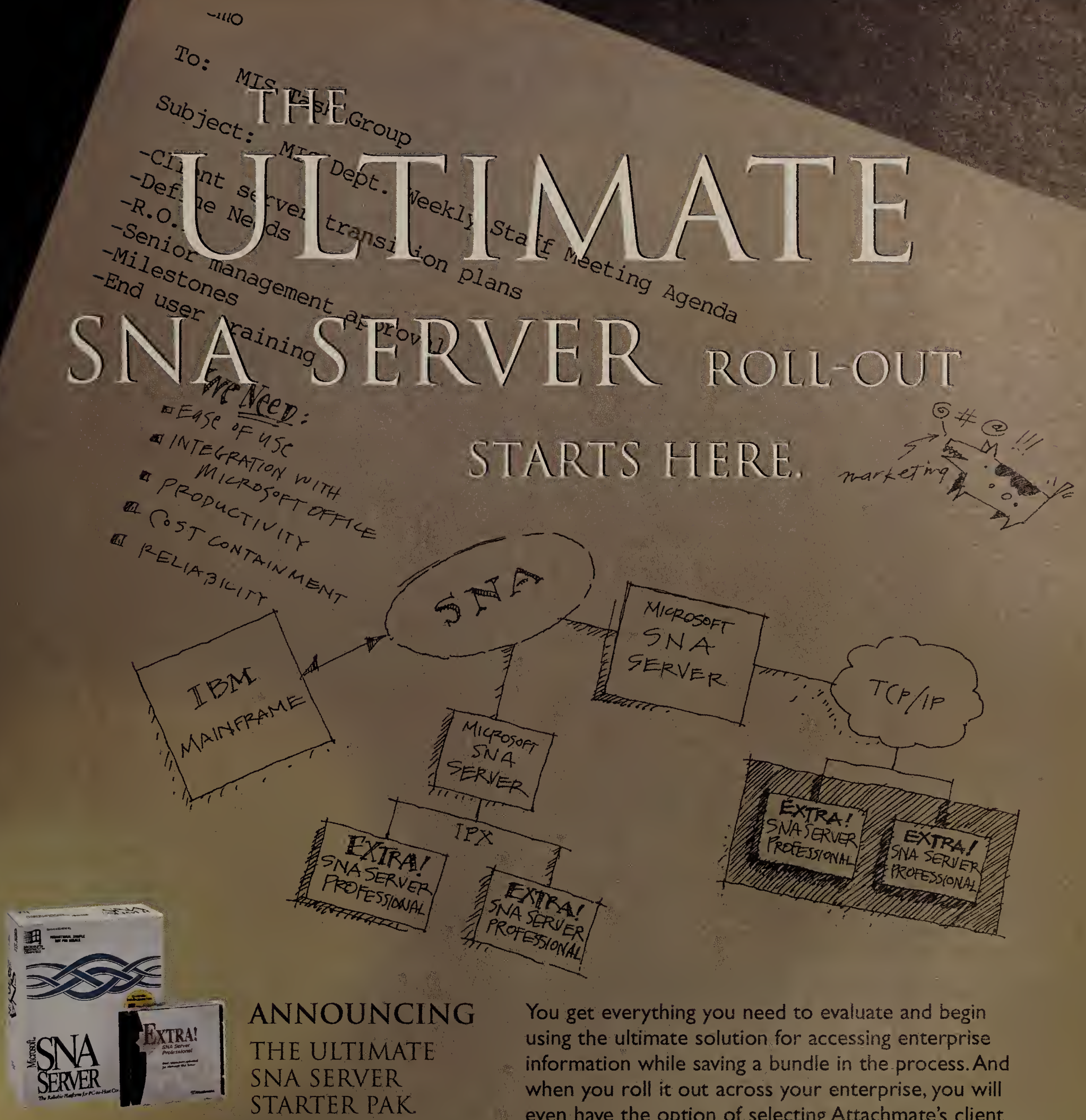
Bay also plans to integrate switching modules in this product. The Model 5000AH hub is a field upgrade to the System 5000 that supports cell switching and LAN Emulation through a 5G bit/sec fabric.

With its current time-division multiplexing (TDM) backplane and planned packet and cell backplanes, the 14-slot **MMAC-Plus** from **Cabletron Systems, Inc.** can support an unlimited number of LANs. This superhub performs standard media access control (MAC)-layer bridging, network-layer routing and Asynchronous Transfer Mode cell switching without additional modules. Cabletron has Ethernet and token-ring switching modules, as well.

Cabletron made the biggest break with tradition when it began shipping its 2.5G bit/sec TDM-based backplane that supports packet and cell technologies in August 1994. If you need segment routing and want it included in your hub, then look closely at the MMAC-Plus. Cabletron's ATM-based cell switching backplane will ship this year.

**3Com Corp.'s ONcore Multifunction System,** acquired from Chipcom Corp., has 17 slots and can support up to 33 LANs — eight Ethernets, 17 token rings and eight FDDI. Its backplane has redundant controllers, and you can configure redundant management for all protocols from one slot. The hub provides backward-compatibility with modules from older generation Chipcom products.

Furthermore, 3Com will integrate Ethernet and token-ring switching in this hub. And with a long-standing alliance with IBM, the product is particularly strong in token-ring support.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What makes this possible is that packets or cells are switched across the backplane based on information stored in address tables. Multisegment backplane hubs have a physical limitation to the number of LANs they can support because they are based on shared LAN technology.

It is clear that superhubs will evolve into high port density switches with shared media support. Some current products will be able to evolve easily, such as Whittaker's Enterprise Hub, which was one of the first to offer ATM. Others will become beached whales, having been caught in a technology tidal pool. So be sure that the superhub you choose will evolve along with you.

Most superhub backplane architectures, including 3Com's ONcore, Bay's System 5000 and Madge's LET, have multiple busses that allow you to create a finite number of separate Ethernet, token-ring and FDDI LANs. That's great if you know just how many LAN segments you need to support. But with VLANs on the horizon, chances are you will want to microsegment even further. VLANs are typically defined by media access control (MAC)-layer switching or network-layer routing services. So it is important to remember that physical-layer port switching will further enhance the flexibility of VLANs no matter which model hub you choose. With multisegment hubs, you just might hit the glass ceiling of LAN microsegmentation across the enterprise.

There are more high-end hub product details on Network World Fusion. Select NetRef then Buyer's Guide for a list of the LAN interfaces each vendor supports, including the lowest and highest port density module offered for each interface, the number of slots the modules take up and their prices.

NetworkWorld Fusion
http://www.nwfusion.com

Multisegment backplanes are the result of the superhub's shared-LAN evolution. While it is clear that switching is the future, networks will continue to have legacy LAN support.

Keeping shared LAN busses has enabled some vendors — such as 3Com with its ONcore Multifunction System and Digital Equipment Corp. with its DEChub 900 MultiSwitch — to use modules from previous hubs, preserving your capital investment in LAN interface boards even as you migrate to a new environment.

However, this is not usually the case for multisegment hubs. Bay's System 5000 is not backward-compatible with its older modules since Bay completely redesigned the backplane. Part of the price for the superhub's functionality is that it requires new modules, which, in turn, have new functionality. This contributes to the higher cost of deploying the new superhub platform over the firm's older technology.

Vendors such as Bay and Whittaker allow you to choose which backplanes you require today and upgrade them as needed.

Digital is working on a way to almost double its backplane speed by plugging in new modules due out in the second quarter. With the new modules, Digital's DEChub 900 MultiSwitch backplane speed of 3.2G bit/sec will jump to 6G bit/sec.

Other products, such as Cabletron's MMAC-Plus, rely on a completely switched backplane that can handle more separate LANs, but that comes at a higher base price. The MMAC-Plus is more expensive because it performs integrated bridging and routing. For the other platforms, you need to buy modules that perform the same function, which can not only add to the cost of the unit, but also reduce the number of available slots.

With the MMAC-Plus, modules plug into a TDM backplane and you assign them to particular LANs via software. A separate management bus enables configuration traffic to be isolated from the main data — a sort of out-of-band management scheme.

### LAN switch modules

| Product | LAN type | Speed (bit/sec) | Ports | Price |
|---|---|---|---|---|
| Alantec's PowerHub | Ethernet | 10M | 24 | $6,950 |
| | Ethernet | 100M | 6 | $5,950 |
| Bay Networks' System 3000 Modular Hubs | Ethernet | 10M | 6 | $3,295 |
| Bay Networks' System 5000 Switching Hubs | ATM | 155M | 16 | $3,295-$9,995 |
| Cabletron's MMAC-FNB | Ethernet | 10M | 3-26 | $2,495-$8,995 |
| | ATM | 155M | 1 | $2,395-$8,390 |
| Cabletron's MMAC-Plus | Ethernet | 10M | 6-36 | $9,995-$38,995 |
| | Token-ring | 4M, 16M | 8-24 | $13,995 |
| | ATM | 155M | 1-2 | $12,995-$19,995 |
| | ATM | 622M | 1-4 | $36,190-$84,775 |
| Centillion's 100 | Ethernet | 10M | 16 | $6,495 |
| | Token-ring | 4M, 16M | 4 | $7,295 |
| | ATM | 155M | 2 | $4,995 |
| Digital's DEChub 900 MultiSwitch | Ethernet | 10M | 6 | $6,145 |
| | Ethernet/FDDI | 10M/100M | 7 | $4,095-$8,195 |
| IBM's 8260 Nways Multiprotocol Switching Hub | Token-ring | 4M, 16M | 20 | $2,795 |
| | ATM | 155M | 2 | $4,600 |
| Madge's LANswitch LET family | Ethernet | 10M | 4-8 | $1,995-$5,995 |
| | Ethernet | 100M | 1 | $3,995 |
| | Token-ring | 4M, 16M | 8 | $4,995 |
| Optical's Infinity Intelligent Switching Hub | Ethernet | 10M | 8 | $7,425 |
| | Token-ring | 4M,16M | 6 | $13,275 |
| | ATM | 25M | 12 | $7,200 |
| | ATM | 155M | 4 | $27,435 |
| | ATM | 622M | 1 | $18,745-$24,995 |
| 3Com's LANplex 6000 family | Ethernet | 10M | 4 | $13,250 |
| | Ethernet/FDDI | 10M/100M | 16 | $18,000 |
| | Token-ring | 4M, 16M | 8 | $13,500 |
| 3Com's LinkBuilder MSH | Ethernet | 10M, 100M | 8-24 | $5,500+ |
| 3Com's ONcore Multifunction System | ATM | 100M | 4 | $8,395 |
| | ATM | 155M | 2 | $6,285 |
| | ATM | 8G | None | $14,995 |
| UB Networks' GeoLAN/100 | Ethernet | 10M | 8, 16 | $7,995-$13,200 |
| UB Networks' GeoLAN/500 | Ethernet | 10M | 8, 16, 24 | $3,995-$13,200 |
| Whittaker's Enterprise Hub | Ethernet | 10M | 8 | $7,200 |
| | ATM | 155M | 2 | $6,000 |
| Xyplex's Network 9000 Hub | Ethernet | 10M | 12, 20 | $8,300-$11,300 |

Editor's note: Bytex's Model 7760 relies on the Enterprise LAN Switch for 10M and 100M bit/sec Ethernet, 16M bit/sec token ring, FDDI and 155M bit/sec ATM switching.

Vendors that provide a proprietary TDM backplane today are migrating them to ATM, albeit not as quickly as the market wants. Remember, these hubs were introduced before much of the ATM specification was complete. Vendors sped to market knowing full well they would have to provide backplane upgrades when standards were approved.

Backplane upgrades can be done in the field, but they are a major network disruption. However, they seem inevitable unless you can postpone your buying decision until the second half of the year when ATM backplanes become available.

Just because a hub lacks a switching backplane does not mean switching is unavailable. For instance, if you have a hub with a multisegment backplane, you can plug a module with an onboard switching engine into it, although you may not get connectivity to the backplane. In effect, the switching module may be nothing more than a stand-alone switch embedded in the hub chassis.

**Hub plug-ins**

Indeed, vendors are adding lots of functionality to superhubs via such add-

## How to tell if you should be buying superhubs

There are several telltale signs that you are the type of user who should be examining superhubs.

For instance, superhubs are for you if you are looking to gain control over a large network by managing connections logically and integrating a wide variety of repeating, bridging, switching, routing and gateway technologies in a single platform. Port switching and virtual LAN support, plus high-speed backplanes that interconnect a variety of functional modules, certainly will stir an interest in superhubs.

You also will want a superhub if you desire high port density to achieve economies of scale. Seeing as most superhubs have chassis with different numbers of open slots, you can obtain the port density that closely matches your needs.

Then there is the issue of hearty fault tolerance and redundancy features. Look at superhubs if you need redundant power supplies to prevent an outage of the main source of electricity from remaining to be the hub's most common point of failure, hot-swappable modules for nonstop networking and card sparing to ensure all the networking eggs you placed in one basket will not crack. Redundant power supplies and spare cards that can pick up operations when the primary ones fail, combined with the ability to swap out new modules for old ones without taking the hub down, are essential in a data center-caliber device such as a superhub.

You can bet that you will be managing a mix of shared and switched LANs as you migrate to newer technologies such as LAN switching, ATM and 100Base-T. A superhub that can manage a range of switching — everything from segment or port switching to packet or cell switching — will provide the most flexibility in creating VLANs throughout the enterprise.

A superhub may be in your future if you want to mix a variety of legacy LAN types such as Ethernet, token ring and FDDI with newer LAN standards such as ATM, 100Base-T, and Ethernet and token ring over fiber. A growing number of superhub vendors are supporting that whole range of LAN interfaces plus modules for bridging, switching, routing and application-layer file, print and gateway services. Keep track of your superhub real estate carefully, though, because many of these modules often take up two or more slots.

— *Glenn Gabriel Ben-Yosef*

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IBM/SNA SOLUTIONS WORKGROUP SOLUT

CAMPUS SOLUTIONS FDDI SOLUTIONS ISDN SOLUTIONS FAST ETHERNET SOLUTIONS

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on modules.

Superhub modules basically fall into two classes: those that provide LAN connectivity to users and specialized ones that offer higher level services such as bridging, switching, routing and gateway links.

The newer switch modules, such as those offered by Cabletron, Bay and 3Com, may or may not provide switched backplane connectivity, so be careful.

As vendors struggle to quickly release switching modules into the market, several of them have products that only draw power from the chassis, requiring you to use an external patch cord to attach existing shared LAN modules to the backplane. The patch cords — a Category 5 twisted-pair cable with two RJ-45 connectors, for example — act as jumper cables to connect a switch port to a LAN port. Not a pretty picture.

Fast LAN technologies such as 100Base-T are also finding their way into the superhub, often combined with switching on the same module. Be sure to check if a vendor supports fast Ethernet over fiber to overcome the distance limits of copper cable while providing 100M bit/sec connectivity at a lower-than-FDDI price point.

While not suitable for backbone applications, 100Base-T may be just the ticket for server connections, particularly if you can keep it down to one node per switch port, eliminating the contention issues inherent in 100Base-T.

Our research shows that fast LAN technologies accounted for less than 5% of all module shipments in 1995. However, that number is sure to explode this year as vendors roll switching into their 100Base-T offerings.

The switching will be done on the 100Base-T module itself either using an Application Specific Integrated Circuit or an Intel Corp. i960 processor. However, connecting this module to the hub backplane will integrate 100Base-T switching into the rest of the network.

While most superhub vendors strive to manufacture a full range of modules for their chassis, some opt to establish OEM relationships. Optical Data Systems uses this strategy to integrate best-of-breed modules from many other vendors into its Infinity line.

Strong contenders in this market segment will have a full portfolio of specialized modules. In addition to traditional shared Ethernet, token-ring and FDDI LAN interfaces, you want to make sure the superhub you choose supports the vendor's entire line of technology offerings. Bridge/router, communication server, terminal server, file/application server, protocol translator, SNA connectivity and ATM access modules are all important to consider.

### Managing the beast

Once you have settled on the backplane and modules you need, turn your attention to management.

The strength of a vendor's network management platform determines how well hub elements can be logically and physically controlled. Superhub management tasks are either dedicated to a particular module, as in Bay's System 5000, or management is distributed across many modules, as in Cabletron's MMAC-Plus.

The issue here is hub real estate and management overhead.

Dedicated management modules provide this specialized function without taking away processing resources on other modules, but they consume valuable slot space.

In distributed management, a particular module is picked at start-up either automatically or based on user configuration. The management functions include port and module monitoring, as well as configuration and traffic collection. Some superhubs, including ones from 3Com, have Remote Monitoring embedded in the hub, making more advanced network monitoring and analysis possible.

All superhubs provide Simple Network Management Protocol Version 1 support, enabling you to control and manage them through your favorite management platform.

**ONLY ONE 100VG-ANYLAN**

**Optical Data is the only company listed in the Buyer's Guide chart on page 44 that supports 100VG-AnyLAN.**

But some vendors, such as Optical Data Systems (ODS), provide value-added features that can make it easier to track down problem-causing workstations or servers. This value-added feature is part of the vendor's network management software, which also runs on major management platforms such as Hewlett-Packard Co.'s OpenView and IBM's SystemView for AIX — formally NetView/6000.

What ODS' software does is correlate network addresses with MAC addresses so you know exactly which physical station is causing problems.

Then there are VLANs for managing logical user groups. The differences among vendors here are great as VLAN technology is still young.

VLANs essentially pick up where port switching leaves off. With VLANs, you can assign users to specific LANs or segments based on the their MAC addresses, IP addresses or some other identifier.

So be very careful to query your superhub vendors to ascertain whether their VLAN approach will meet your needs.

### Superhubs with a future

Don't be surprised if vendors tell you all of their technology will eventually be available in their superhubs.

Still, it is probably best to stick with vendors that have demonstrated aggressiveness in shipping products rather than relying on promises and vaporware.

The superhub will continue to be important as it becomes the focus of the integration between shared and switched technologies. Net managers are not considering whether or not new technologies such as ATM, 100Base-T and LAN switching will have a home in their corporate networks because many already have pockets of these technologies today.

The problem has become one of integrating users across the enterprise during the migration of shared to switched solutions. The superhub provides a powerful platform with its wide range of technology support and fault-tolerant features.

Will you have ATM in your backbones or workgroups? Will some of your users be screaming for more bandwidth that only switched 100Base-T can cost effectively give them? Will you still have a significant number of users on shared token-ring and 10Base-T LANs?

The answer to these questions is yes. Creating the delicate balance between new and legacy environments is the challenge for the next several years and the superhub provides the integration and migration framework you will need.

*Ben-Yosef is president of Clear Thinking Research, Inc., a Boston-based market research and consulting firm. He can be reached via the Internet at ggb@world.std.com or by phone at (617) 536-8117.*

## Reader views on high-end hubs

Based on 100 interviews.

**Features requiring most comparison among products**
(Highest possible score of 5)

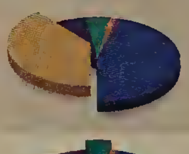
| | |
|---|---|
| Reliability | 3.98 |
| Virtual LAN support | 3.59 |
| Aggregate backplane speed | 3.43 |
| Backplane design | 3.06 |
| Chassis design | 2.75 |
| Power supply redundancy | 2.58 |

**Modules requiring most comparison among products**
(Highest possible score of 5)

| | |
|---|---|
| LAN switch | 3.89 |
| WAN interface | 3.57 |
| Communications server | 3.37 |
| Bridge/router | 3.29 |
| File or application server | 2.90 |
| Terminal server | 2.47 |

**How should you deploy management modules?**

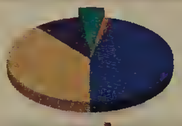
One for entire hub
**39%**



*"The more management modules you put into the hub, the quicker you eat up backplane resources."*

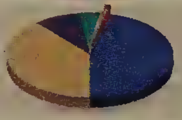
*"Multiple management modules are a pain. They take up too many card slots."*

One for each LAN type
**5%**



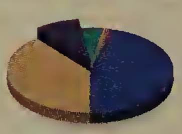
*"There are better tools for managing each protocol type, such as FDDI, separately."*

One for each LAN segment
**1%**



*"It is easier to isolate problems this way."*

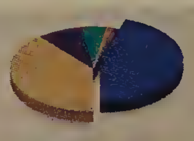
One for all LAN management and separate ones for each functional module
**9%**



*"Switch technology needs its own management. But it would be good to manage the rest of the hub with one module."*

*"You can overload a single management module. So you need to distribute management."*

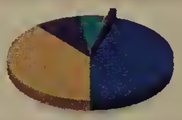
Combined approach
**45%**



*"If you go with one approach, you don't have as much flexibility, and not as much control over the equipment."*

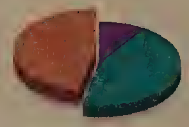
*"A combined approach gives you options, flexibility, and it can be tailored for specific needs."*

Don't know
**1%**



**Should you integrate ATM switching, LAN switching, routing and hubbing in one product?**

Go ahead
**47%**



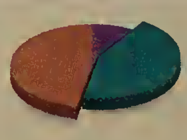
*"Technology has changed over the last two years, and there is more integration now."*

*"I'm in the middle of doing it now, and it will really make life easier."*

*"I like the idea, but I'm concerned about standards because they are still changing."*

*"There is a synergy among functions because they are very compatible. Besides, it doesn't take up a lot of room, and it is less expensive."*

Don't do it
**44%**



*"ATM should be outside the hub. It is a newer technology, and it's not developed enough to be mixed with the others."*

*"There is no single company that can provide it all in one product."*

*"Each technology has special features, and it would not be good to put them together."*

*"Network performance can suffer by having everything in one box."*

No advice
**9%**

Focus Data, an independent market research firm in Framingham, Mass., conducted this survey. Focus Data specializes in gathering primary data from end-user organizations regarding their enterprise network environment and needs. For more information about Focus Data services, send E-mail to mdabbon@focusdata.ultranet.com or call Mona Dabbon at (508) 626-2556.

# Instrument of change

*Tivoli's Frank Moss has some hurdles to clear in his quest to alter IBM's systems.*

**By Charles Bruno**

Twelve years ago, Frank Moss left his job with IBM's labs in Yorktown Heights, N.Y., frustrated with his inability to effect change at the computer giant.

Now the tables have turned. On the heels of its $743 million acquisition of Tivoli Systems, Inc., IBM has asked Moss to take control of its SystemView and NetView programs worldwide. "What I'm so excited about is they've asked me to change IBM, rather than the other way around," the Tivoli chief executive officer says. "IBM is thirsty for change now."

Indeed, IBM appears ready to shake up its processes and procedures to establish itself as the dominant player in network and systems management. Although IBM has yet to firm up many details of the new organization, Tivoli will remain an independent business unit — much like Lotus Development Corp., which IBM acquired in June — and Moss will report directly to John Thompson, senior vice president and software group executive at IBM.

"We're going to have a cohesive group," Moss says. "We intend to have a single division with a single product line and a single message."

To meet those goals, Moss will have to manage several hundred highly decentralized developers in each of IBM's NetView for AIX and NetView/390 groups, as well as handle Tivoli's own staff of close to 300 employees. He'll also have to grapple with integrating Tivoli's technology with IBM's NetView and SystemView offerings. And all the while, analysts say he'll need to quell anxious third parties that feel Tivoli may have surrendered its open systems neutrality by shacking up with IBM.

"I give him three months until the frustration sets in," says Ellis Gregory, CEO of Raleigh, N.C.-based NetTech, Inc. and a 28-year IBM veteran who specialized in NetView and VTAM development.

Moss will have to adjust to a much more decentralized organization, Gregory says, with development groups spread across the globe. "It will be different than managing a company the size of Tivoli."

Donna Scott, research director of systems and network management at Gartner Group, Inc., a consultancy based in Stamford, Conn., concurs. "The question is whether Frank Moss will be able to scale up to meet the demands of managing a company that's almost triple of what he has now," she says. "And it's critical that Tivoli's R&D people stay onboard."

There are some who say Moss is walking into a systems management mess at IBM, where instability reigns. Bill Warner, who headed up the SystemView and NetView units, was squeezed out in October and replaced by Al Zollar. Zollar will now report to Moss. This follows other departures affecting IBM's network and systems management units: Ellen Hancock, vice president and general manager, left in January 1995; and Sanjiv Ahuja, who headed up the NetView for AIX effort, also left last year.

Check out what else Frank Moss had to say about his new position with IBM in our on-line Q&A. You'll also find links to last week's news coverage of the IBM acquisition of Tivoli and related resources. From the main menu select News+ then WANs & Internetworking.

http://www.nwfusion.com

## Filling the gap

Analysts and third-party developers expect Moss may have an easier go of it than his predecessors because the Tivoli acquisition plugs some holes in IBM's systems management strategy.

For one, it appears to put an end to the continuing saga of SystemView, IBM's slow-to-evolve systems management framework. While elements of SystemView will surely survive, Tivoli Management Environment (TME) will emerge as the centerpiece of IBM's systems management framework, according to Tim Wilson, a senior consultant with Decisys, Inc. in Sterling, Va.

"Under SystemView, IBM has not provided APIs to manage applications the same way you can manage networks," Wilson says. "TME and Tivoli's AMS fill that void."

TME is Tivoli's object-oriented software that provides event management, software distribution and systems availability data across heterogeneous client/server nets. AMS is Tivoli's Applications Management Specification, a set of APIs Tivoli defined to instrument software in order to make it manageable (*NW*, May 1, 1995, page 20). Several application vendors have licensed the specification.

Scott says IBM bought more than a management framework; it also picked up the much-needed Tivoli/Enterprise Console, which monitors and automates responses to systems events. And IBM acquired valuable expertise on developing management tools for Windows NT.

"IBM's products were a collection of offerings that launched from the same place but didn't offer the level of integration Tivoli will bring," Scott says.

While there is some overlap in the companies' product lineups, Moss stressed that the combined systems management entity will address that issue and eliminate repetitive products. IBM executives expect technical differences between the two companies will be resolved within the next few weeks.

Analysts say product overlap is minimal, with software distribution the key area that needs to be addressed.

IBM's NetView Distribution Manager (NetView/DM) focuses largely on OS/2 and other IBM environments, Gregory says. TME's software distribution facility will likely prevail, but not until both companies devise a plan to migrate existing NetView/DM users. Gartner Group's Scott advises buyers of software distribution products to be cautious until IBM and Tivoli provide further details.

As for object-oriented technology, IBM offerings that support IBM's System Object Model (SOM) and Distributed SOM should pose little problem in working with Tivoli products because they are based on TME technology IBM licensed several years back. Additionally, SOM/DSOM and Tivoli's TME are all based on Common Object Request Broker Architecture technology. "There is reason to believe SOM/DSOM products support management services that are equivalent to our API," Moss says.

Others are more skeptical. It may well be a trivial matter for IBM and Tivoli to unite SOM and DSOM products with TME, Wilson says. "But in the area of applications management, IBM will have to retool a lot of applications to support Tivoli's AMS APIs." Moreover, he says both companies' vision of providing a cohesive line of tools and applications that scale from workgroups to host-class machines is "still a long way off."

## Pause for concern

Technical issues aside, a factor that casts a pall over the deal is IBM's presence hanging over Tivoli. Tivoli takes pride in calling itself the Switzerland of systems management, supporting a broad array of

*See* Analysis, *page 52*

PROFILE

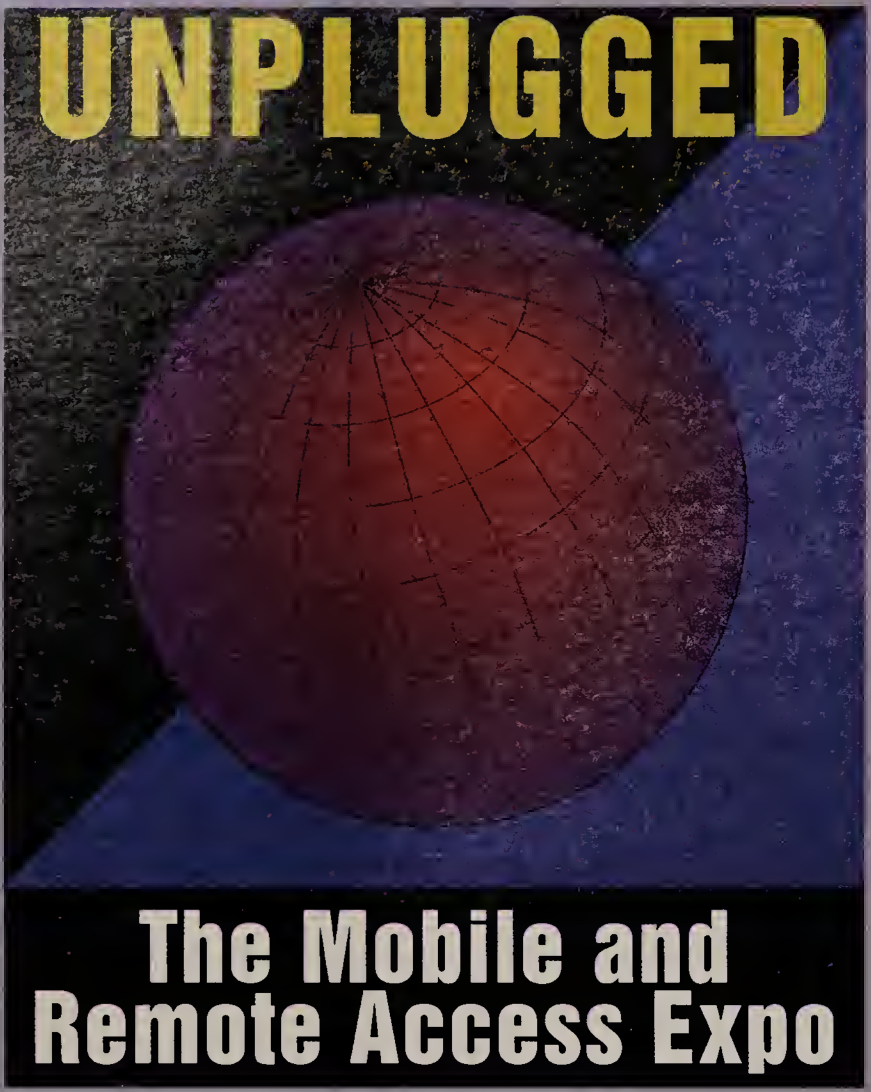
**Frank Moss**

**Title:** Chief executive officer, Tivoli Systems

**Career path:** Vice president of Lotus' Consulting Services Group; vice president of Lotus' Network Applications and Systems Division; founder and vice president of software development at Stellar Computer Corp.; vice president of Domain Engineering at Apollo Computer, Inc.; and served in various R&D positions at IBM. Joined Tivoli in 1991.

**Education:** B.S. aerospace and mechanical sciences, Princeton University; M.S. and Ph.D in aeronautics, MIT

# NetworkWorld UNPLUGGED



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# THE VIEW FROM NT

## Digital's NetView for NT is an attractive SNMP alternative.

### By Todd Coopee

Digital Equipment Corp. has finally delivered on its 2-year-old partnership with IBM and Microsoft Corp., and the result is an SNMP management tool to be reckoned with.

Digital's Polycenter Manager on NetView 3.0 for Windows NT – NetView for NT, for short – packs many of the features found in Unix-based products, such as OpenView and Spectrum, into an approachable package with a list price of just $6,995.

However, while the 32-bit NetView for NT's out-of-box capabilities make it easy to start mapping and monitoring your network, our tests revealed a number of shortcomings, such as limited NetWare support, lack of support for SNMPv2 and inability to share data across multiple Simple Network Management Protocol consoles, that may hinder its effectiveness. And, like other SNMP consoles, NetView for NT's core functionality can only take you so far, so you may need additional products to create a complete management platform.

Other than that, our experiences with NetView for NT were overwhelmingly positive.

Furthermore, under the purview of the NetView Association, an organization cosponsored by Digital and IBM, more than 45 third-party vendors will port their net applications from Unix to NT for use with Polycenter Manager. Digital also offers a number of additional layered software products that can be integrated into NetView for NT.

**Start me up**

We began by installing NT's SNMP service and TCP/IP protocol on our workstation. We then installed NetView for Windows NT on our management console about 45 minutes later.

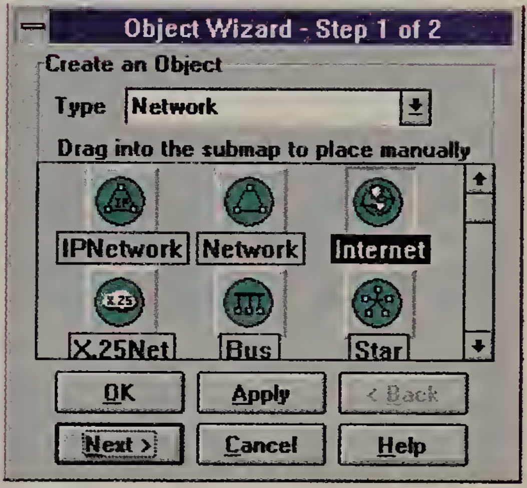
After entering our name, organization and install drive, the remainder of the installation ran unattended from CD-ROM without a hitch.

Once the software was installed, we rebooted our PC, logged in to a privileged account that was a member of the Windows NT Administrators group and double-clicked on the Start Daemons icon in the NetView program group to launch NetView's system daemons.

For the program to work properly, all of the daemons must be running before NetView for NT is started. While starting the daemons manually is by no means an inconvenience, Digital should incorporate them into an NT service that could be started at boot time.

Once invoked, NetView for NT uses an autodiscovery process to generate network maps and a topology database. As each node is discovered, SNMP configuration information is retrieved and stored in the database, and an icon representing the device type is assigned to a location on the map. In general, the more SNMP-savvy devices that exist on the network, the more efficient and accurate the maps and information are.

The discovery process is fully configurable. By default, discovery generates a network topology by working outward from the SNMP console. Adding IP addresses to a seed file enables you to expand the management region and generate maps starting with nodes other than the management workstation. Since gateways make the best seeds, we added router IP addresses to our seed file.


Object Wizard - Step 1 of 2

Create an Object

Type: Network

Drag into the submap to place manually

**Figure 1:** *NetView for NT's use of wizards facilitates the configuration of the software. The Object Wizard, shown here, guides you through the process of creating network objects.*

Once a management area has been set up, NetView for NT creates maps in a very IP-centric fashion, hierarchically populating them with domains, subnets, segments and devices that can be reached from the console workstation. Unless the automatic layout option is turned off, each submap uses an algorithm to determine how net objects are arranged. Physical representations of bus, star and ring topologies are used whenever possible.

After a baseline map has been created, you can set the rate at which NetView polls the network for changes. When new objects are discovered, they can either be automatically incorporated into their corresponding submap or stored in a holding area for manual placement. You can also determine the frequency at which the status of existing nodes is checked and how long they must be considered down before being deleted.

NetView for NT also provides several options to enhance the readability of network maps. Via the Object Wizard, Net-

## NetResults

**Product**
Polycenter Manager on NetView for Windows NT 3.0

**Vendor**
Digital Equipment Corp.
(800) 344-4825

**Price**
$6,995

**Pros**
- ▲ Straightforward installation procedure.
- ▲ Wizards facilitate configuration tasks.
- ▲ User interface augmented with Windows 95 style guidelines.

**Cons**
- ▼ Incapable of distributing data across multiple consoles.
- ▼ Does not support NetWare bindery or NetWare Directory Services.

View for NT guides you through the process of creating objects and adding them to submaps (see Figure 1, page 51). Existing icons can be customized and background images can be applied to individual submaps, as well.

Unfortunately, while maps may be scaled and zoomed, they cannot be printed from within NetView.

During the map-building process, we quickly discovered one of NetView for NT's drawbacks. While all of the names for NT workstations and servers were identified correctly, NetWare servers and workstations were only represented by a simple box with an IP address. This is due to NetView for NT's lack of support for the NetWare bindery and NetWare Directory Services. As a result, you are forced to manually enter each non-NT user and server name into the system, a prospect many administrators might find too daunting.

Nonetheless, NetView for NT's thoroughness impressed us. It had no trouble locating all items on the network, and outside of our NetWare servers and workstations, it did a perfectly adequate job of distinguishing between the classes of polled objects. Recreating the maps several times yielded similar results.

### Network traversal

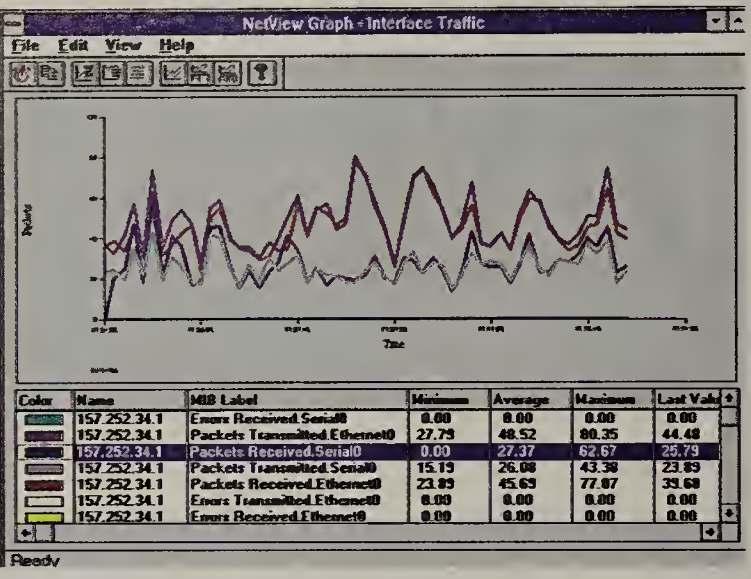
Once your network is fully mapped, you can travel from the root submap to each subnet, hub, router, server or workstation. Depending on your preferences, network maps can be navigated using the mouse or keyboard. As you move from one level to the next, NetView for NT minimizes previous levels into icons to keep the screen uncluttered.

The handy Navigation Tree window represents the maps you have opened with icons placed in a tree-like structure. NetView for NT depicts the connection between child and parent submaps with lines and gives you point-and-click access to each.

NetView for NT ships with more than 140 predefined Management Information Bases (MIB) that work with most common network devices.

The Browse MIB icon, part of the standard toolbar, allows you to scrutinize MIB properties for any object in the current submap. NetView's use of Windows 95 style conventions really pays off here. By following Windows 95's table conventions, object data is cleanly laid out, making sorting and searching a breeze.

Network World Fusion
http://www.nwfusion.com
Grab a list of applications available from the NetView Association. Select NetRef, Buyer's Guides and Reviews then Polycenter Manager on NetView.



| Color | Name | MIB Label | Minimum | Average | Maximum | Last Valu |
|---|---|---|---|---|---|---|
| 🟩 | 157.252.34.1 | Errors Received.Serial0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 🟪 | 157.252.34.1 | Packets Transmitted.Ethernet0 | 27.79 | 48.52 | 80.35 | 44.48 |
| 🟦 | 157.252.34.1 | Packets Received.Serial0 | 0.00 | 27.37 | 62.67 | 25.79 |
| ▭ | 157.252.34.1 | Packets Transmitted.Serial0 | 15.19 | 26.08 | 43.38 | 23.89 |
| 🟥 | 157.252.34.1 | Packets Received.Ethernet0 | 23.89 | 45.69 | 77.87 | 39.68 |
| ⬜ | 157.252.34.1 | Errors Transmitted.Ethernet0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 🟨 | 157.252.34.1 | Errors Received.Ethernet0 | 0.00 | 0.00 | 0.00 | 0.00 |

**Figure 2:** *NetView for NT allows you to graph data collected from network objects in real time, making them useful for spotting potential problems.*

Standard and enterprise-specific MIBs can be loaded and unloaded by selecting the MIB loader from the Tools menu. Once loaded, objects incorporating the MIB can be queried for data.

NetView comes equipped with several predefined applications that allow you to query MIB variables and monitor real-time network performance. CPU utilization, TCP connections and Ethernet traffic are some of the many built-in measurements you can utilize. We used a number of these applications and found them an excellent foundation for someone starting the monitoring process to build on.

As an alternative, NetView for NT also ships with a MIB Application Builder Wizard that helps you define small programs to retrieve information from objects at specified intervals and produce output such as tables, graphs and forms. We used the tool to create graphs of several useful MIB values, such as bandwidth utilization and packet collisions in real time, and found it relatively straightforward to use.

To complement the Application Builder, NetView for NT comes equipped with a MIB Data Collector. This tool is useful for tracking network data over an extended period of time. The Collection Wizard allows you to set up the collection of MIB data from one or more network nodes at regular intervals and archive it in an external file for later use. Long-term network data can be especially useful in capacity planning and resource allocation.

Because it can quickly give you an overabundance of data, NetView for NT also provides a graphing tool (see Figure 2). The tool can be used to display SNMP data in real time in a line graph, which is useful for spotting a potential problem before it gets out of hand. Unfortunately, three-dimensional graphs are not available, and printing a graph requires copying it to the clipboard and pasting it into a graphics-savvy application.

Whether you're monitoring data in real time or simply collecting it for later consumption, you can also define thresholds and generate alarms when they are exceeded. For instance, you might want to be notified when packet collisions on a router reach an unacceptably high level. NetView for NT does not allow MIB variables to be combined in formulas for more complex threshold monitoring.

When an alarm is generated, the event can be displayed on the console or forwarded to an administrator via Microsoft Mail, the only electronic mail package supported. Script files can also be linked to a particular event for execution. For instance, abnormally high bandwidth usage on an Ethernet segment could place a pager call.

Besides script files, third-party applications can be attached to specific events and automatically fired up to provide additional information on the device in question. For example, you could launch a vendor-supplied program that gives you the ability to view and manage actual ports on a network hub.

We found it pays to read the documentation for any SNMP manager from cover to cover, and NetView for NT is no exception. Fortunately, Digital's documentation is up to the task and even includes a fairly comprehensive glossary of terms that beginners will find useful. On top of the printed documents, NetView for NT sports an extensive on-line help system. Unfortunately, it's not context-sensitive.

Digital's Polycenter Manager on NetView for Windows NT appears poised to make a splash in the SNMP management marketplace, but its functional limitations will prevent it from knocking off the Unix leaders anytime soon. Nevertheless, its price, hardware platform and familiar interface, combined with the proliferation of Windows NT at many corporate sites, make Polycenter Manager on NetView for Windows NT an intriguing product worth a serious look.

## HOW WE DID IT

We installed and tested Digital Equipment Corp.'s Polycenter Manager on NetView for Windows NT on a 486/66 PC running Windows NT Workstation 3.51 with Service Pack 2 installed. The workstation was equipped with 48M bytes of memory and a 1G-byte disk drive. The network used for testing comprised more than 1,000 nodes, ranging from a VAX minicomputer running OpenVMS to Unix workstations to SNMP-savvy bridges, hubs and routers.

Once we'd installed the product and logged in to an account with administrator privileges, we built a series of maps representing the objects within our Class B IP network. After cleaning up the maps a bit, we used NetView for NT to monitor our mission-critical servers and routers.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 37.

*Coopee is the assistant director of technical services at Trinity College in Hartford, Conn. He can be reached via E-mail at todd.coopee@trincoll.edu.*

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# Analysis

*Continued from page 49*

hardware platforms.

"IBM guaranteed me that is what they are looking for," Moss says. "We asked ourselves over and over again, could we remain autonomous and work with other vendors? The more we talked to others in the industry — including Lotus — the more it became apparent we could."

Even if Tivoli can keep its independence intact, Wilson says IBM's ownership is "going to give pause for concern about the openness of Tivoli's APIs."

Michael D'Eath, Tivoli's director of strategic alliances, isn't worried. "The last thing IBM wants to do is change the model and risk fracturing the partnerships that were built upon integration," he says.

At least one third-party developer seems to welcome the collaborative venture. "We believe IBM's presence will bolster the value of TME by adding network management and a complete line of professional services — which Tivoli couldn't match," says Craig DeNoce, director of enterprise marketing at Sybase, Inc. Sybase embraced TME in 1991 as the basis for its Enterprise SQL Server Manager.

Another benefit of the IBM/Tivoli relationship, DeNoce notes, is that it should help Tivoli in its quest to offer a scalable solution that includes host systems management — a solution competitors Computer Associates International, Inc., BMC Software, Inc. and Platinum Software Corp. already offer.

### Go out and kill

If Moss is to reach such goals and drive change in IBM the second time around, analysts say he will have to sustain momentum within IBM and get the word out on how the union will work.

Moss already is sharing his vision. "Our manifesto is simple," he says. "The platforms we support and the databases we work with will all be 100% customer-driven. It has nothing to do with IBM or any vendor's desire to support specific platforms."

At a celebration last week in Hawaii of Tivoli's top sales performers, Moss sent a message to his workers. "We want to be No. 1 in systems management worldwide but now have the opportunity to do that in a shorter period of time," he told them. "If the competition thinks we're going to slow down, they're mistaken. Now go out there and kill them."

*Bill "Wej" Jensen*
*Univ. of Wisconsin*
*NOC Volunteer*

*Doug Moeller*
*Interphase*
*NOC Volunteer*

*Robin Littlefield*
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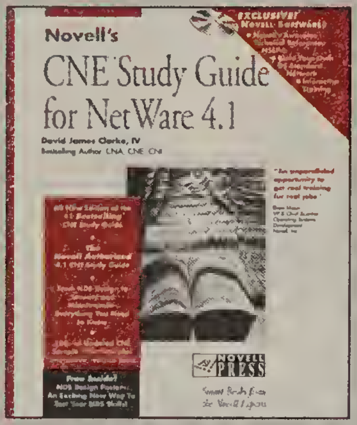

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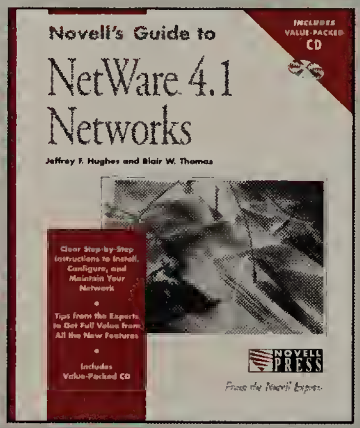

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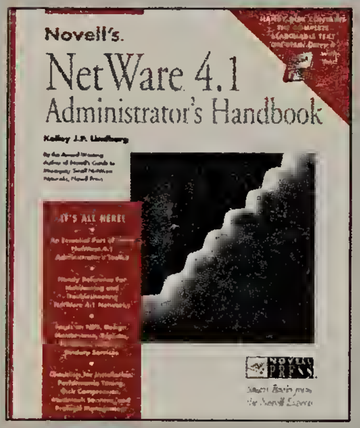

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## Briefs

■ *Consulting company* **SRI International** *has formed a new* **Information, Communications and Entertainment (ICE)** *practice that will aid clients in using information technology and communications to enter new businesses or expand existing ones.*

*Joining the ICE practice is Howard Blank, a former partner with Booz, Allen & Hamilton, Inc. who has worked closely with the telecommunications and information technology industries; James Hall, formerly senior vice president and global practice leader for the ICE industry sector of CSC Index; Philip Casciotti, formerly vice president at CSC Index; and Alan Kolnik, formerly a principal for Gemini Consulting's Strategy Group.*

*SRI International: (415) 859-4659.*

■ *The* **MIS Training Institute** *in April will conduct its two-day* **Building an Enterprise Security Architecture for Networked Organizations** *seminar in several cities.*

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*The seminar costs $795 and will be offered April 1-2 in Boston, April 9-10 in San Francisco and April 29-30 in Chicago.*

*MIS Training Institute: (508) 879-7999.*

■ *According to research conducted at* **Christian & Chambers, Inc.,** *36,000 jobs were created in Internet-related companies in 1995.*

*The executive search firm, specializing in recruiting workers for the Internet industry, predicted 100,000 more jobs will be created in the field this year.*

*Christian & Chambers: (216) 464-8710.*

# Breaking even in the move to client/server

**By Daniel Blum**

Moving to client/server messaging this year could slash your ongoing electronic mail support costs in half, but you'll incur hefty start-up charges and wait two years to recoup your investment.

Those findings are based on a cost model developed for a 25,000-user network that has two mail systems, each with separate mail hubs, directory infrastructure and other elements. Both mail systems share some enterprise-level components, such as transport circuits. But you can probably get the same findings with a 10,000-user network or one with even fewer users.

Annual per-user support costs

Figure 2

(Based on a 25,000-user network)

| | File sharing | Client/server |
|---|---|---|
| Support staff | $5 million for 50 administrators | $2.5 million for 25 administrators |
| Client software maintenance | $140,000 | $200,000 |
| Transmission upkeep | Backbone maintenance of $50,000 | Server software maintenance of $157,500 for 25 servers at $6,300 each |
| Troubleshooting | $2,179,800 or 30% of total cost allocation | $714,375 or 20% of overall ongoing costs |
| Total support cost | $7,369,800 | $3,571,875 |
| Per-user cost | $294.79 | $142.87 |

The figures do not include how much E-mail traffic affects the cost of running physical network equipment, operating first-line network help desk or paying mainframe CPU charges.

### The model

The model we used assumes that migration takes more than one year and, during that time, you will pay 65% of your current costs to maintain a file-sharing E-mail net. It also assumes you'll pay 65% of the annual client/server support cost during the migration period.

This, plus the start-up costs for the new client/server, causes a temporary upsurge in total messaging expenses. However, this investment is recovered two years (see Figure 1).

Products using a client/server architecture place the bulk of message processing chores on souped-up, multitasking servers. This approach enables you to put many more mailboxes on a single server than you can with traditional file sharing-based products and simplify your configuration.

Exactly how much you'll save and when you'll break even are determined by three basic factors: how well your file-sharing E-mail network is set up today, the quality of the client/server messaging system you're moving to and how you handle the migration.

It's ironic that the users doing the worst job of running their file-sharing network today stand to gain the most by moving to client/server messaging. However, many companies have been stuck with file-based messaging for so long, they've learned — sometimes painfully — to implement prudent cost-cutting measures.

Those measures include consolidating post offices; creating a standard hardware, software and network configuration; and centralizing or tightly coordinating administrative personnel, practices, roles and responsibilities (*NW*, Dec. 11, 1995, page 58.)

### Cost per user

My company estimates that the average LAN E-mail shop with a file-sharing product needs one post office for each 100 users, leading to one administrator for each 500 users. The full cost of this, plus maintaining corporate directories and gateways to the Internet and X.400, is close to $300 per user per year .

Two-year return on investment

Figure 1

| | File sharing | Client/server |
|---|---|---|
| Capital investment | NA | $3,432,500 |
| First year support costs | $7,369,800 | $7,112,089* |
| Second year support costs | $7,369,800 | $3,571,875 |
| **Total** | **$14,739,600** | **$14,116,464** |

* Assumes you will pay 65% of annual support costs for file-sharing and client/server E-mail nets during migration, or $4,790,370 for file-sharing E-mail support and $2,321,718 for client/server E-mail support.

In a client/server environment, we anticipate you'll get a user-to-server ratio of at least 1,000-to-1. That ratio could increase over time to 2,500- or even 5,000-to-1 as enterprise intranets and client/server messaging products improve.

During the early years of client/server messaging, we anticipate you'll also be able to drive that all-important user-to-administrator ratio to 1,000-to-1, as well. This ratio, plus some other assumptions we made about reduced troubleshooting costs and simplifications of messaging backbone and gateway topologies led to a cost of less than $150 per user per year for client/server messaging (see Figure 2).

### Other factors

The quality of your client/server messaging system also determines how much you'll save. While vendors have slick brochures and high performance claims, the fact is that top players Lotus Development Corp. and Novell, Inc. aren't shipping their latest and greatest Internet Mail and X.400 software with the first release of their client/server packages. This will complicate your rollout of those products and prolong your migration because you'll have to continue using older components and replace them at a later stage.

Also, you may not want to load up the first commercial release of Lotus, Microsoft Corp. and Novell mail servers with 1,000 heavy users right off the bat because those products are unproven. To check this point, you'll want to talk to actual users as the products roll out. This caution, of course, may not apply to users of established client/server messaging products from Banyan Systems, Inc., Digital Equipment Corp. and Hewlett-Packard Co.

Lastly, don't discount that torturous migration process in your cost analysis. As you migrate, you'll be paying double damages because most vendors don't take you across a level playing field where the new server supports the old client and the old server supports the new client. Instead, you have to use connectors — what we used to be called gateways — to link the old system to the new, meaning you have to keep the old post offices around for some time.

So as you calculate the break-even costs for your company, make sure you have a good inventory of your existing messaging system and what it costs to run it. Also, evaluate the replacement solution carefully. And finally, plan a detailed migration process and verify each step with your vendor or integrator to avoid any unpleasant surprises.

*Blum is a principal at Rapport Communication, a messaging consultancy, and coauthor of* Decision '96, *a report that looks at client/server messaging offerings from Lotus, Microsoft and Novell. He can be reached at dblum @interramp.com.*

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There's much more client/server E-mail migration data on Network World Fusion. You'll find earlier stories from Rapport Communications plus resources from our client/server messaging special section. Select Careers, then E-mail migration.

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Principal Consultant Managing team in analyzing, designing & developing integrated systems to support customer profile, product profile, inventory, order entry & quality assurance components using Oracle CASW, Oracle RDBMS, Oracle Forms, & Oracle Reports, SQL*Loader, SQL*Plus, SQL*Net, PL/SQL, entity-relationship modeling, MS-DOS, MS-Windows, HP-UX (UNIX), & Graphical User Interface (GUI); design new applications & enhance automated systems; recommend new computer systems & software to support client needs; write project designs & develop specifications; oversee training sessions & assist in creating training materials & user guides; supervise project assignments, cost & time estimates, work plans & resource scheduling, installation & implementation functions. $60,000/yr. 40 hrs/wk. M-F. B.S. or equivalent in Computer Sc. or Computer Eng. & 3 yrs. exp. in job offered or 3 yrs. related exp. as Sr. Systems Analyst or Computer Consultant in design & development environment using Oracle platforms, SQL platforms, MS-DOS, MS-Windows, Unix, GUI's & entity-relationship modelling. Send resume to the nearest NC Job Service Office. Resume must include Social Security Number. Ref. Job Order #NC2645139 030.062-010.

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SOFTWARE CONSULTANT: Provide services to clients in design & development of on-line & batch applications; implement on-line panels & processes; migrate warranty claims of service maintenance contracts to UNIX environments using Oracle, PRO*C, PRO*COBOL, UNIX OS, & PL/SQL; design & develop SMC Parts Tape Load, load & reformat data, port manufacturing systems & material quality systems from COBOL to client-server & UNIX environments with Unikix, SQL*Loader, Oracle, Microfocus Cobol; convert program languages into shell scripts; develop, test & implement EDI migration systems; design & develop user-friendly interfaces using shell programming under UNIX OS; provide technical support & training to users. $39,600/yr.40 hrs/wk. B.S. or equivalent in Computer Sc. or Computer Eng. or Math or Statistics & Computer Sc. & 2 yrs. exp. in job offered or 2 yrs. related exp. as Systems Analyst or Programmer Analyst or Statistical Assistant. Exp. in related occupations must include use of Oracle, UNIX platforms, PRO*C, PRO*COBOL, PL/SQL, Unikix, MF-COBOL, SQL*Loader. Submit resume to Mary Rogers, Dept. or Employment Services, 275 E. Main St., 2W, Frankfort, KY 40621. Cover ltr. must reference JO#0345438. Only persons with authorization to work permanently in the U.S. need apply. An Equal Opportunity Employer.

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Network Field Technician, duties and responsibilities include but are not limited to the installation, modification, and repair of microcomputer hardware and software systems and provides technical assistance and training to systems users. Assists in the design of equipment as needed. Must have two years experience as a Network Field Technician. Must be able to type 60 WPM, must be able to speak Turkish, must be able to pass Novell's standard CNE test, must be able to pass employment drug test, must have knowledge of Novell Networks, must be able to design or redesign cable systems. Must have knowledge of C, SQL, PASCAL, COBOL and Query-IBM AS400 languages, and must have knowledge of Oracle, Word Perfect, Lotus 1-2-3, AmiPro, Excel, Windows 3.1, Networker, IBM AS400, and Office Vision Software. 40 hr work week. Salary: $16.66/hr. Work site: Reno, Nev. Please submit resume and a copy of this ad to: 9529312, Nevada Employment Security Division, 70 W. Taylor St., Reno, Nev. 89509-1700.

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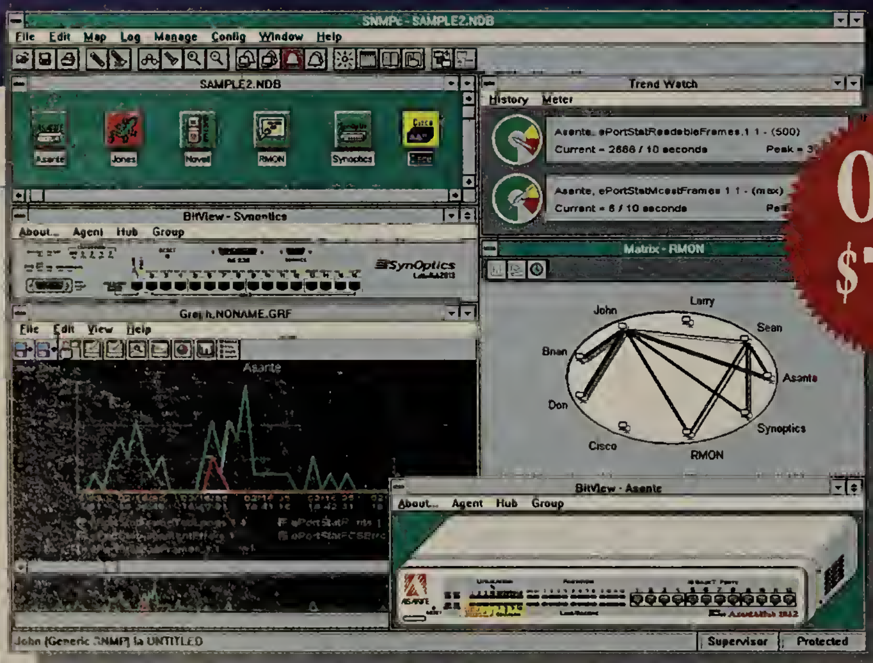

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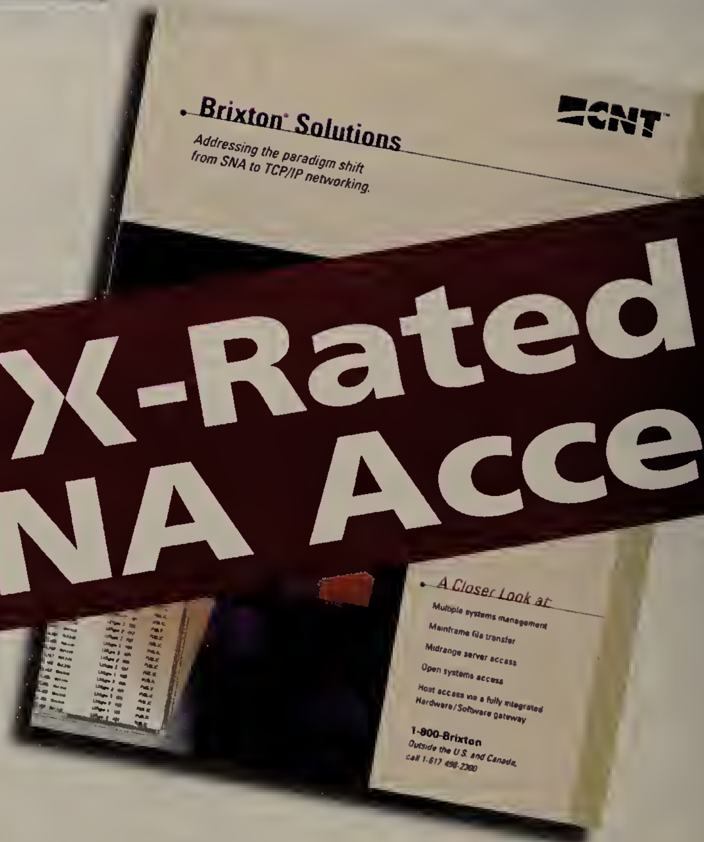
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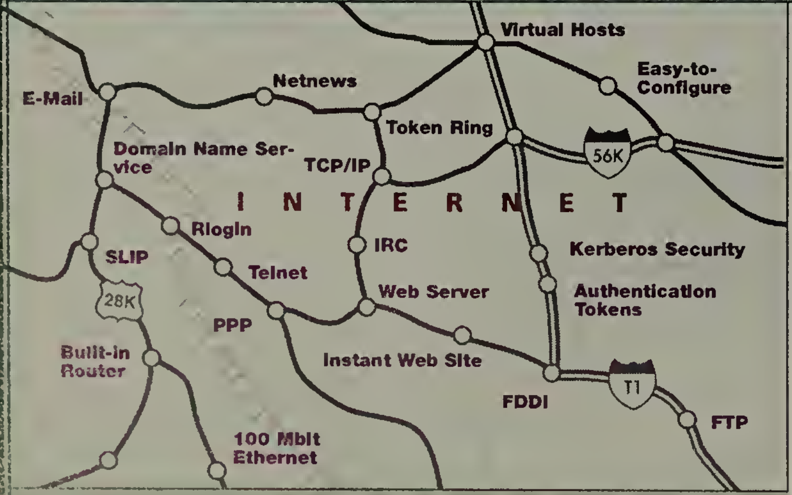

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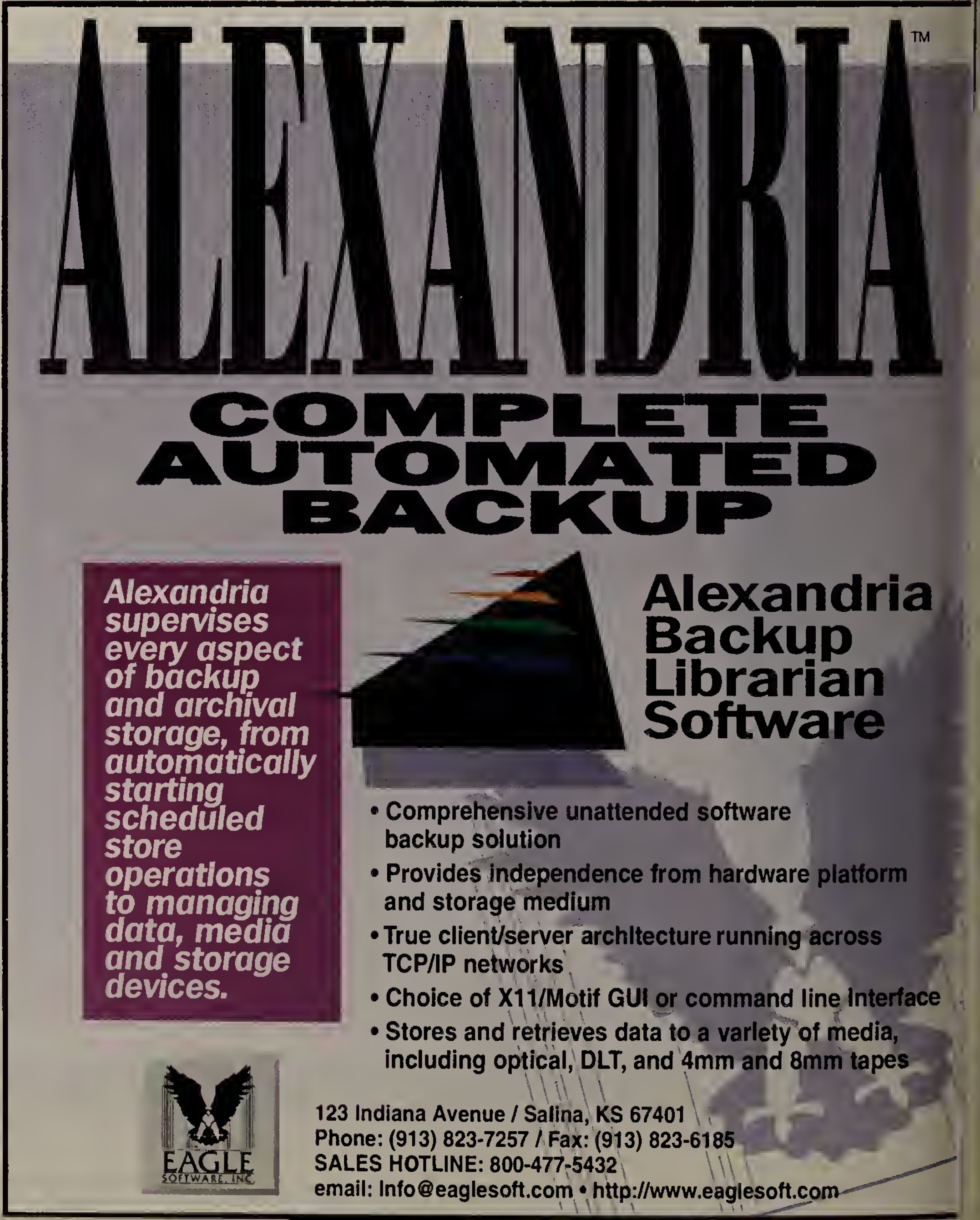

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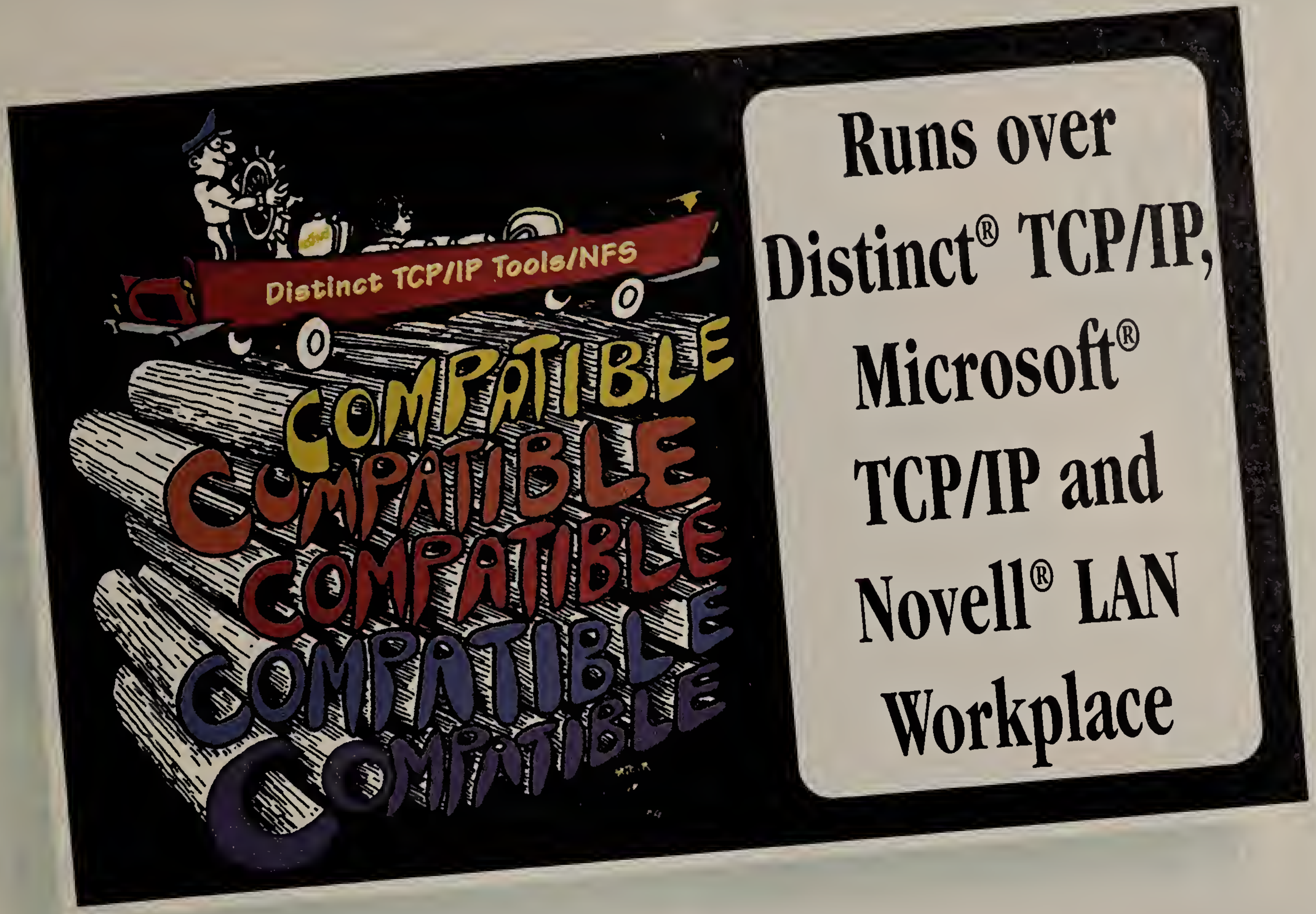

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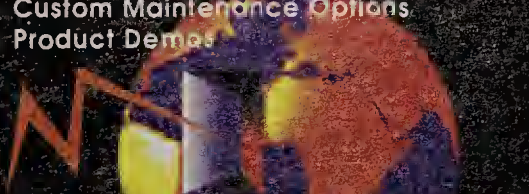

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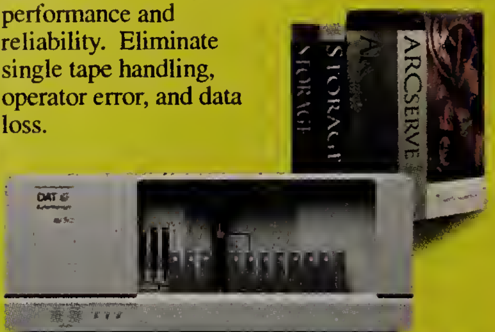

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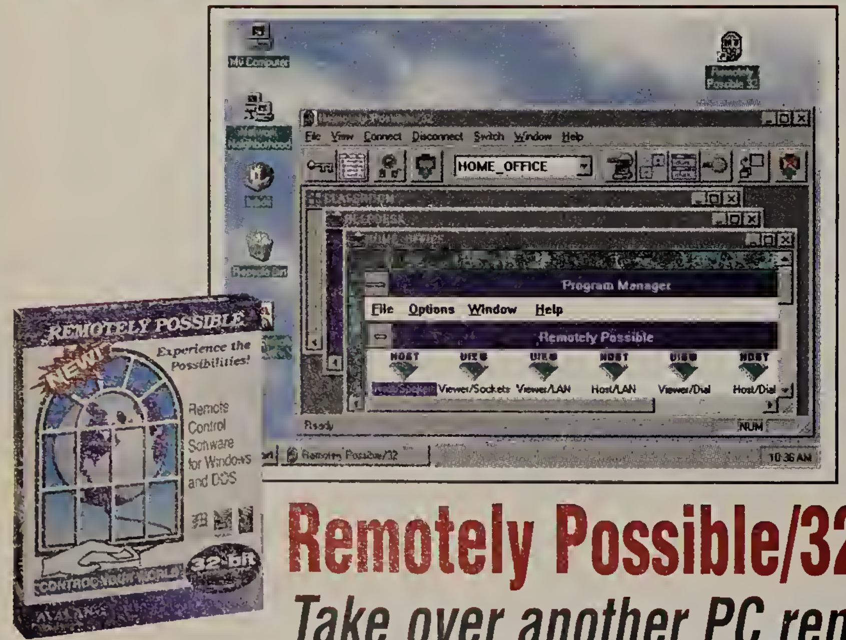

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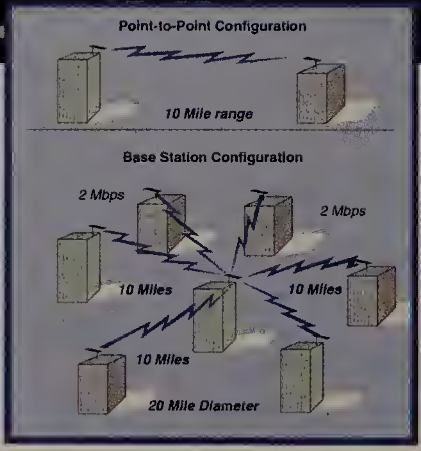

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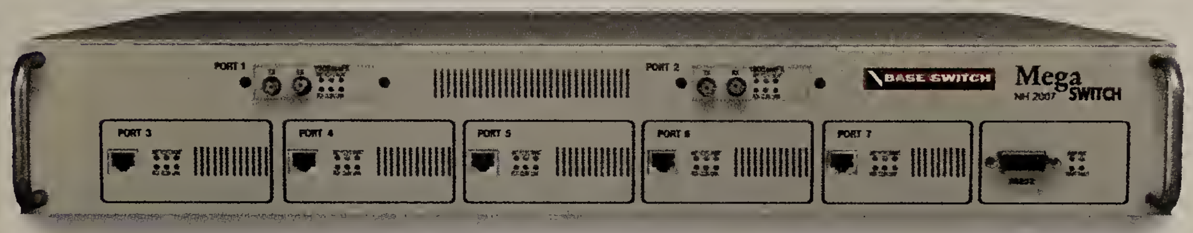

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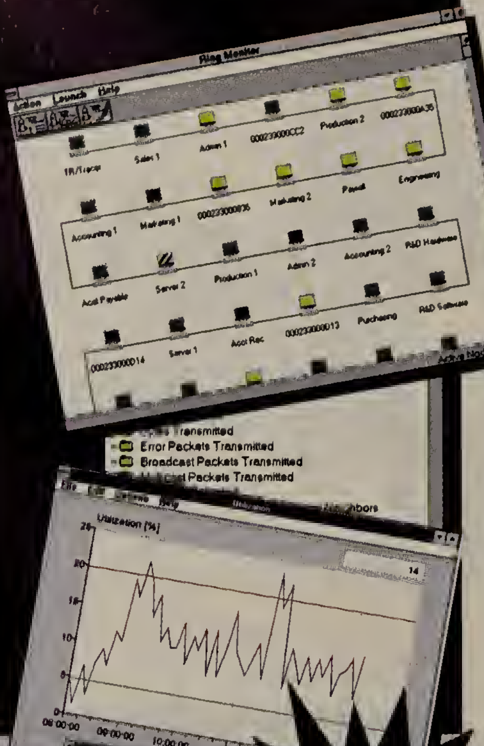

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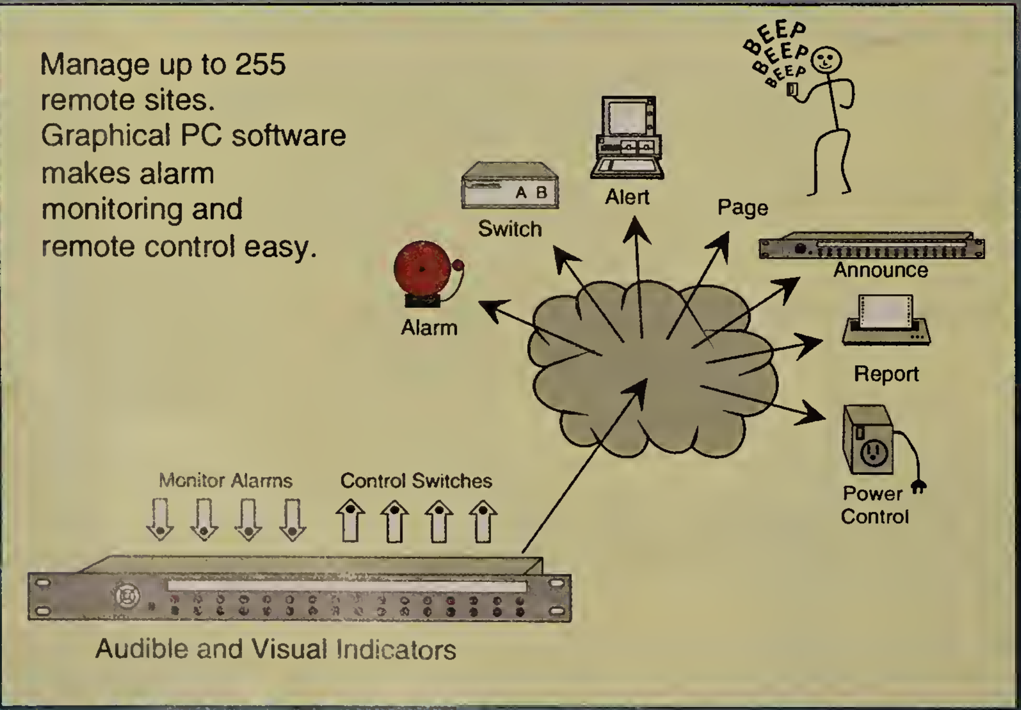

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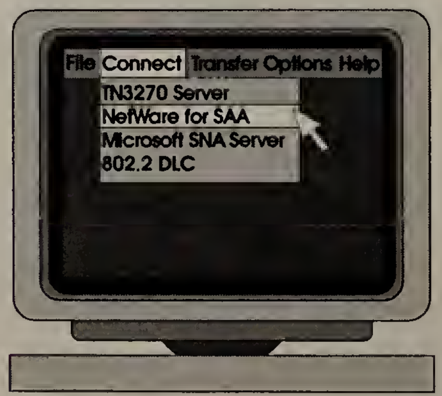

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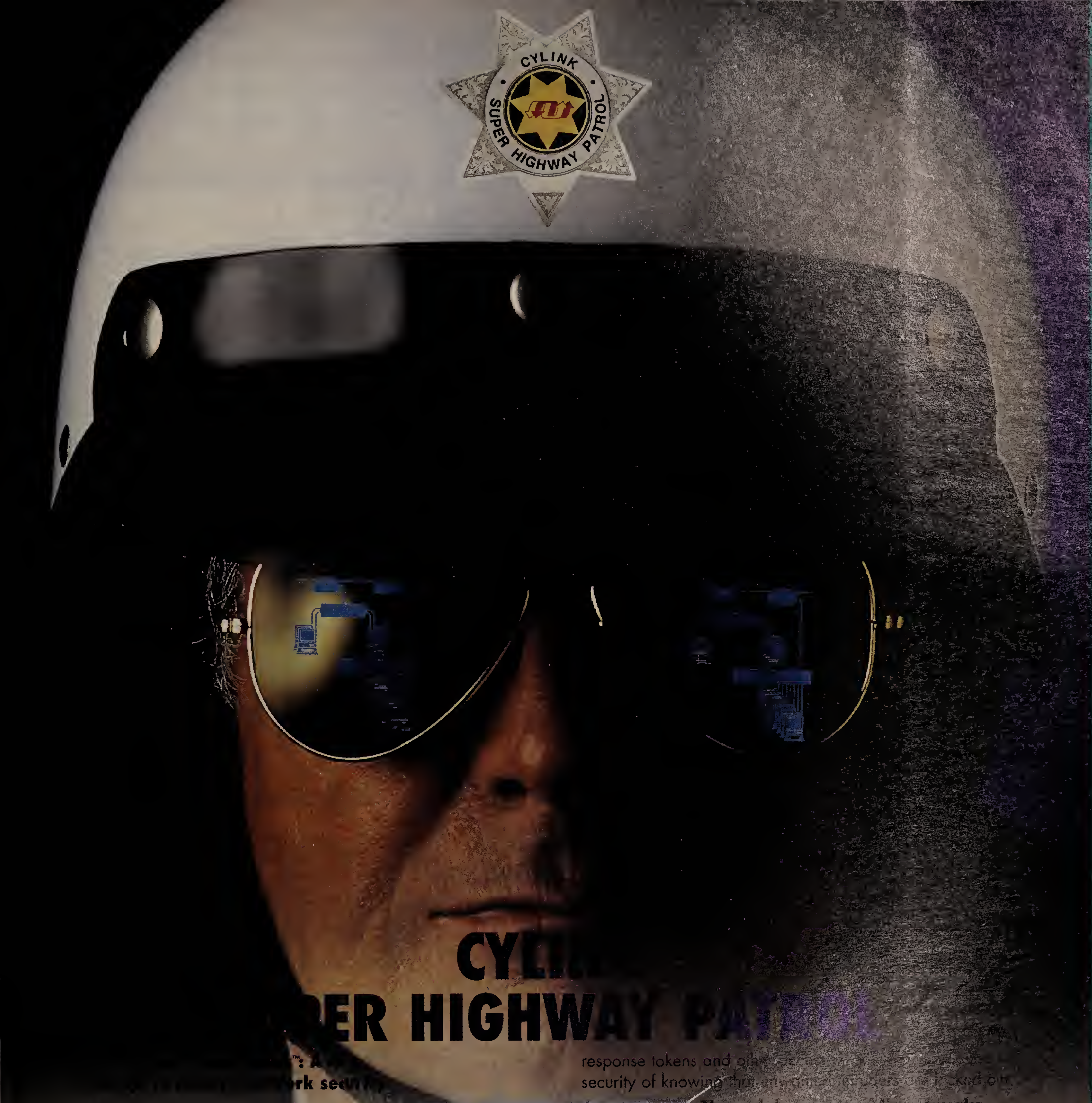

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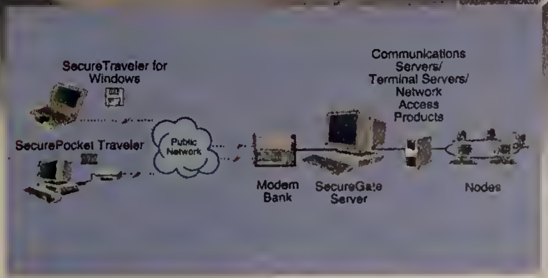
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MARKETPLACE

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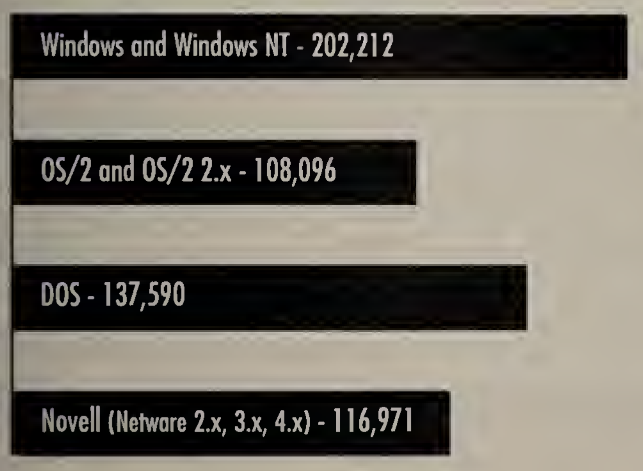

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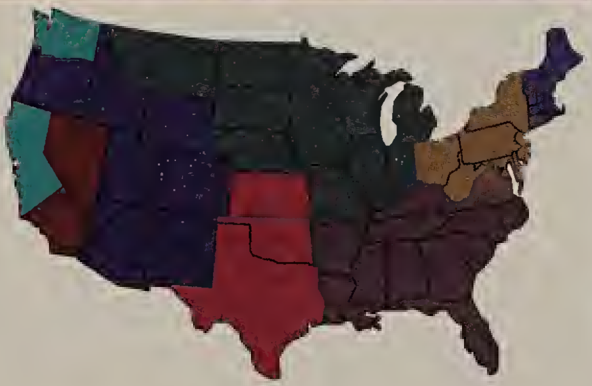

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# Microsoft's Web server has management twist

**By Kevin Fogarty and Peggy Watt**
*Redmond, Wash.*

Microsoft Corp. is not only trying to make World-Wide Web servers a commodity, it's trying to define how they will be managed.

When the company ships its Internet Information Server (IIS) this week, it will include four Simple Network Management Protocol Management Information Bases (MIB) that let any standard management application monitor the performance of the Web servers.

The MIBs will be the first to be widely deployed for Internet servers. There will be one each for HyperText Transfer Protocol (HTTP), File Transfer Protocol, Gopher, as well as one for general Internet functions such as telnet, according to Phil Holden, product manager for Microsoft's Systems Mangement Server (SMS).

Observers said Internet servers present an especially difficult management challenge because they can be accessible to countless end users and the data on them can change constantly. Tools for gauging performance and usage are badly needed to ensure the servers stay on-line.

Because management standards have yet to be set in this area, Microsoft's MIBs could become de facto standards for Web server management, analysts said.

Microsoft wrote the MIBs in an effort to increase the manageability of IIS and its attractiveness as a Web platform, Holden said.

> *"Microsoft is the world's largest and most successful standardization organization, so their leadership in this area is key," Jeff Case said.*

While Microsoft's SMS management software can manage IIS and the performance monitor built into NT can track variables such as Common Gateway Interface requests, Microsoft wanted to provide a more standards-based approach to management.

Microsoft's action will benefit users as long as the company cooperates with standards-setting groups such as the Internet Engineering Task Force (IETF), said Jill Huntington-Lee, an analyst at Datapro Information Services Group in Delran, N.J.

"This could become the de facto standard, but a MIB is just a database of variables; it's not like creating an architecture for management," Huntington-Lee said.

"I don't really see this as an affront to the IETF. It's more open than I would expect from Microsoft," she said.

Several companies and groups are developing MIBs for HTTP, said Jeff Case, president of SNMP Research, Inc. in Knoxville, Tenn. The IETF is forming a working group for this purpose, he said.

By shipping a set of MIBs before anyone else, Microsoft is breaking new ground without shutting others out of the effort altogether, Case said. "Microsoft is the world's largest and most successful standardization organization, so their leadership in this area is key," he said.

SNMP hooks are only one of a series of weapons Microsoft is using to compete with Web server leader Netscape Communications Corp.

Another is the Open Database Connectivity support that can convert Web browser requests to SQL Server queries on the fly. Microsoft is using this feature to encourage customers to link their Web pages to a back-end SQL Server database.

In addition, IIS will work with public folders in Microsoft's Exchange groupware product.

IIS' price also is right. It comes bundled free with NT Server and is downloadable from Microsoft's Web site.

Separately, Microsoft last week shifted its focus away from its proprietary protocols and toward 'Net standards in its Internet Studio multimedia content development tool kit, formerly code-named Blackbird. Microsoft ended development of Blackbird version aimed at its proprietary Microsoft Network format in favor of a version that would generate Web content.

The Web version is due to ship later this year.

*Senior Editor John Cox contributed to this story.*

## UniForum

*Continued from page 12*

the kind of differentiator that's going to separate Unix from NT," said Scott Winkler, an analyst with Gartner Group, Inc., a Stamford, Conn.-based consultancy.

But the move has an upside. "The 64-bit systems will have more appeal to large system users . . . and that is where Unix's long-term strength is as compared to NT," Winkler said.

There currently is little demand for the added 64-bit functionality, added Peter Galvin, chief technologist at Corporate Technologies, Inc. of Lowell, Mass., a consulting and systems integration company.

"In some cases, [the move to 64 bits] is a little bit of demand creation," admitted Kuljeet Kalkat, SunSoft's group marketing manager for Solaris products.

The lack of demand is a bit out of step with 64-bit hardware, which has already entered the marketplace from Sun Microsystems Computer Corp., Silicon Graphics, Inc. and Digital. Silicon Graphics and Digital also have already introduced their own 64-bit Unix operating systems.

SunSoft executives said they will take a four-stage approach to moving Solaris to 64 bits. By mid-1996, SunSoft will have an asynchronous I/O subsystem in place to handle the large streams of data a 64-bit operating system can churn out. That capability will be included in Solaris 2.51. In early 1997, Solaris users can expect a 64-bit file standard with 32-bit backward-compatibility. By early 1998, a full 64-bit operating system will be available with virtual addressing capabilities. This, for example, could allow an entire database to move into main memory for local queries.

HP has previously announced it will take its HP-UX to 64 bits by 1997. Though few details are available, HP and SCO together will move toward a combined 64-bit operating system that is separate from each vendor's current products. ■

UniForum

# HP, others to attack Sun's 'Net server base

**By Ben Heskett**
*Palo Alto, Calif.*

Hewlett-Packard Co. will introduce a line of low-end, Intel-based Web servers this week, which, combined with a recent Unix-based announcement, may signal a new era of competition in the Web server space.

The HP systems, like those just launched by Silicon Graphics, Inc., offer competition to the perceived industry leader, Sun Microsystems Computer Corp.'s (SMCC) Netra server line.

Others are angling for the SMCC Netra sweet spot. Intel giants such as Digital Equipment Corp. have also announced Web server programs.

And Compaq Computer Corp. is ready to do the same, creating a series of bundles with Netscape Communications Corp., Novell, Inc. and Microsoft Corp. Web software, according to sources.

While all vendors claim their Web server solutions are plug and play, each has taken a different tack.

In the Intel space, Compaq will launch its Web servers through their SmartStart CD-ROM start-up and configuration tool, according to sources.

HP will bundle Microsoft Web offerings, such as Internet Information Server, on its low-end LC and LH NetServers and provide a comprehensive service and support package to go along with it. Other offerings will follow, according to HP officials.

The HP NetServer LC and LH systems will be available in June. Prices are not set, but HP officials said they would range from $5,000 to $8,000. The announcement is part of an overall "inter-connected workgroup" strategy by HP to link all its products, including printers, together in a seamless network.

NetFRAME Systems, Inc. also will soon announce a Web server that combines Novell Internet capabilities with messaging and groupware in one box.

Packaged Web servers are designed to reduce complexity.

"While you could say that vendors are really just putting together packages that any smart user could put together themselves, there's some value in that, particularly for [the Web] segment of the market, which frankly is going to be where a lot of the growth is," according to Ted Julian, research manager for Internet commerce at International Data Corp., a Framingham, Mass.-based consultancy.

Ray Grant, director of information technology services at Portland Community College in Oregon, has configured his own HP 9000 K-class and T-class Web servers — one for internal and another for external use — using existing boxes. But Grant said he would consider buying a prepackaged Web solution if he was in the market.

Grant also would like to see text-retrieval and on-line publishing tools bundled in future boxes.

Analysts said vendors will soon offer a variety of configured Web options.

For example, a vendor such as Compaq may offer an electronic commerce server for the enterprise, a workgroup model and an entry-level box for remote offices.

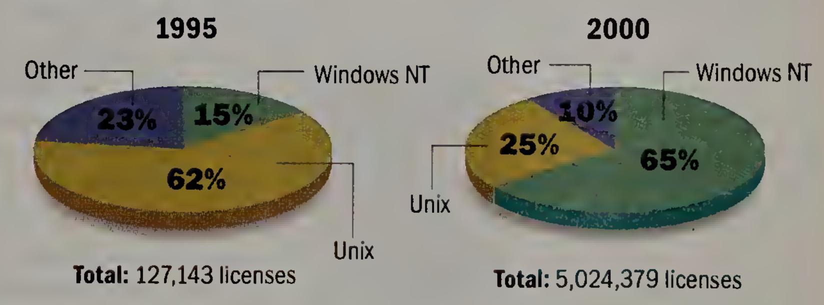
In the Unix space, HP has decided to take on SMCC's Netra server line head on, with a comprehensive bundling strategy.

With its 9000 line, HP will simply package popular Internet applications such as Netscape's communications or commerce server.

SMCC's Netra line has claimed the edge in the market because of its low price ($6,000 to $17,000), a first to market advantage and box optimization — including security, electronic mail, connectivity and remote access services. SMCC officials said HP's recent Unix announcement was a validation of Netra's success. ■

**Web server operating system market***

**While Unix is currently the Web server operating system of choice, that's likely to change by the year 2000.**



*Preliminary survey results

SOURCE: IDC, FRAMINGHAM, MASS.

## Sahara

*Continued from page 1*

Sahara foresees JavaView enabling users at their own management stations to adjust bandwidths and reconfigure their virtual private networks (VPN) within the carrier network.

What stands out about JavaView is that it promises to overcome three key problems with Web-based management: lack of integration with current management platforms; lack of real-time reporting; and security.

On the integration front, JavaView works with any management platform equipped with a Web browser. The software views HTML-coded Simple Network Management Protocol data that is sent from a remote device.

Second, JavaView offers real-time, dynamic management information, not the static Web pages offered by other schemes. This is done by a Java applet sent to the management station from the remote device, which continually polls for fresh data.

Web security problems are addressed in two ways: Java's interactive nature allows it to respond to a query by delivering an applet, and if the applet does not reach an authorized workstation, it will not run. In addition, the applet can be customized to demand further authentication from the user at the workstation. If the user wants even more security, the applet can encrypt the SNMP traffic.

Sahara envisions carriers installing Web server farms within their nets for users to monitor the status of VPN ports.

One of the attractions of JavaView is its potential for broad application. "The concept of this lends itself into virtually any computing environment," said Thomas Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J.

Sahara came up with the architecture to manage its pending line of ATM access boxes, which will aggregate user traffic into ATM cellstreams that ride over carriers' ATM backbones. Those devices are scheduled to be out this fall.

JavaView lets any workstation — whether Unix, Macintosh, Windows NT or DOS — equipped with a Web browser that supports Java get management information from remote devices equipped with JavaView.

Within a carrier network, that could address the problem of managing a multivendor network, said Bill Euske, senior vice president of advanced networks and technology for MFS Communications Company, Inc.

"SNMP was designed for a common platform, yet each vendor has its own innovations. That made it difficult to run a multivendor system," Euske said.

With JavaView embedded in the devices, the manager could access custom management features, he said.

In Sahara's scenario, the JavaView-enabled ATM multiplexer would send a trap if a port failed, for example, turning an icon red on the management screen. The manager would launch a Java-equipped Web browser such as Netscape 2.0 or Sun Microsystems, Inc.'s Hot Java to connect with the Sahara device.

A Web agent in the device would respond with a Web page of system administration information about the device. It would also launch a Java applet, which Sahara calls a SNAPlet. The SNAPlet periodically polls the device for real-time management information.

©Sahara: (203) 699-8899.

## TCP/IP

*Continued from page 6*

load overhead that we now can reduce to minutes," said Laird McCulloch, president of Competitive Automation.

McCulloch said each device on a TCP/IP net local server typically requires a minimum of 20 minutes to define to their local server or router, plus the user is off-line and unproductive during that time. And with systems administrators making about $40 per hour, users will save hundreds of thousands of dollars in administration overhead, McCulloch said.

**McCulloch** *claims users will save thousands of dollars in overhead.*

Join is client/server software that runs on SunSoft, Inc.'s SunOS and Solaris, and Digital Equipment Corp. and Hewlett-Packard Co. Unix servers. It will be offered for other servers later this year.

Join employs an enhanced version of the IETF Dynamic Host Configuration Protocol (DHCP) standard, which defines how IP devices can automatically be registered to a server in a TCP/IP environment.

Join servers work with DHCP client software, which is already supported in a variety of client packages, such as Microsoft Corp.'s Windows products. DHCP also is recognized by major router vendors' equipment, such as Cisco Systems, Inc., Bay Networks, Inc. and 3Com Corp. As a result, Join can issue addresses across multiple TCP/IP nets linked by routers.

The Join package works by letting the systems administrator define how addresses are to be assigned and how devices are to be configured.

When a new device is linked to the network, it broadcasts a DHCP message to the server and asks for an IP address. The Join server then sends the device an address and other information, such as the host name, net domain name and IP addresses for local Domain Name Servers.

The Join server automatically tracks addresses to prevent the same one from being issued twice and keeps track of client configuration details.

"When done manually, two separate devices could accidentally be assigned the same IP address which could cause the network to crash," said David Brown, director of network services for the New York Times Co. Newspaper Division.

Join is $1,500 per server, with support for up to 300 addresses.

©Competitive Automation: (415) 321-4006.

## Frame relay

*Continued from page 1*

circuits (PVC) with zero committed information rate (CIR), and a sizzling 99.9% guarantee for users that buy PVCs with a positive CIR.

MCI's move appeared to be aimed not so much at AT&T as at Sprint, which last year introduced a standard 98% data delivery guarantee on zero CIR PVCs. Such PVCs, on which every frame is marked discard-eligible, are standard on Sprint's Burst Express frame relay offering, making service-level guarantees especially critical.

But both MCI's and Sprint's tariff filings reveal that frame relay guarantees do not cover as much as you might expect.

For example, Sprint's data delivery guarantee is not backed by any money-back clause. Instead, Sprint gives itself 60 days to measure the data delivery, then promises to move users to PVCs with a 19.2K bit/sec CIR if the performance does not meet the 98% standard.

By contrast, MCI offers credits of 5% or more of the total monthly cost of the WAN for failure to meet its guarantee of delivering 99% or 99.9% of the frames across the network, although only after 60 days of measurement. In addition, MCI lets customers cancel the offending PVC without charge if the problem is not fixed after six months.

"This goes a long way to provide confidence in the service," said Christine Heckart, senior broadband services analyst at TeleChoice, Inc. in Verona, N.J. "Any time a carrier signals a willingness to give back money, that's good."

Sprint officials countered that credits are not the key. "Customers are more concerned about resolving the problem," said Brad Hokamp, Sprint's director of advanced data services.

In any case, users cannot assume the performance they see is what either Sprint or MCI will look at in making their data delivery calculations, analysts noted. For example, both MCI and Sprint do not count frames dropped because of net problems considered outside of their control.

The former nontariffed frame relay contracts defined the carrier's responsibility more broadly, Heckart said. "This is what happens when you get into a tariff environment because you get a bunch of lawyers involved," she said.

But MCI officials praised the tariff process. "The voodoo associated with the pricing gets removed," said Bill Callahan, MCI's senior manager of broadband data marketing.

### Divergent pricing

Unlike AT&T, both MCI and Sprint decided not to raise their frame relay prices. AT&T hiked its rates 6%, arguing that tariffing forces it to serve all customers, including those whose networks are not "economically attractive" to provision (*NW*, Jan. 29, page 1).

But the filings by the No. 2 and No. 3 carriers show divergent pricing approaches. MCI port prices range from $180 per month for 56K or 64K bit/sec speeds to $735 per month for 512K bit/sec ports and $1,470 per month for T-1 speeds.

These rates are much lower than AT&T's rates, but MCI charges more than AT&T for PVCs.

For example, MCI lists $97 per month as the price for a one-way 64K bit/sec, or double that — $194 — for 64K bit/sec capability in both directions. AT&T charges $110 per month for a two-way 64K bit/sec.

Sprint charges a higher rate than MCI for frame relay ports but offers a flat rate on its PVCs.

The FCC decided that carriers could grandfather existing deals offering discounts, but ordered carriers to file each negotiated deal as a so-called contract tariff within 90 days. ■

### The frame relay fine print

**MCI's and Sprint's frame delivery guarantees, exceptions and returns for zero CIR service:**

**Guarantees**

| | MCI | Sprint |
|---|---|---|
| **Guaranteed frame delivery rate:** | 99% | 98% |

**Exceptions**

**Delivery rate does not include data loss due to:**

| | MCI | Sprint |
|---|---|---|
| Insufficient bandwidth in user's egress channel | ✓ | ✓ |
| Local exchange circuit failures | ✓ | ✓ |
| Scheduled maintenance windows | | ✓ |
| Backup or dial-up PVCs | | ✓ |
| Network-to-network interfaces | | ✓ |
| CPE problems | ✓ | |
| Acts of God | ✓ | |

**Returns**

**MCI**

- Two months' failure to meet guarantee: 5% credit for those months' charges.
- Three months' failure to meet guarantee: 10% credit for those months' charges.
- Additional credits for additional months of failed service.

**Sprint**

- Two months' failure to meet guarantee: User migrates to 19.2K bit/sec CIR PVC at no charge.
- No credit offered.

SOURCES: MCI AND SPRINT, WASHINGTON, D.C.

# Amoco

*Continued from page 1*

The crisis needs the undivided attention of Amoco officials, who in tense situations like to thrash out decisions in person. Unfortunately, some executives are at corporate headquarters in Chicago and others are at the company's Houston campus, and the storm won't wait for the next plane out.

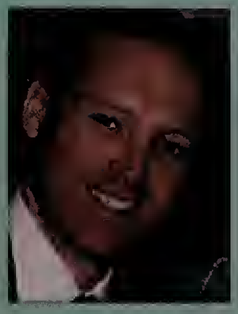
If a crisis like this arises, anxious Amoco executives won't hurriedly check flight schedules. More likely, they will head for special conference rooms that within minutes will let them meet with their peers face-to-face, though not in person. "This is no regular H.261-class videoconference," said David Beering, senior staff telecommunications analyst for Amoco. "It's a virtual conference."

With the virtual conference system, which was completed last week, voice and audio quality are so good that physical location becomes incidental, Beering boasted. Participants at two sites will feel like they are sitting at opposite sides of a table, not 1,000 miles apart, he said.

"This allows a totally different type of interaction than you get with a typical videoconference," he added.

Of course, Amoco needed some pretty sophisticated technology to achieve the virtual effect. So it added high-quality, production-level audio gear and vdeo projectors to the audio-video modems and Asynchronous Transfer Mode switches already in place.

"This application was assembled to allow our users to have a chance to actually touch a real ATM application. Router trunking over ATM is an important application, but it isn't something someone would be able to relate to. The virtual conference room is," Beering said.



**"This is no regular H.261-class videoconference. It's a virtual conference."**

*David Beering*

Amoco, a $30 billion petrochemical conglomerate, runs an ATM network that links its Chicago headquarters, the Houston campus, research centers in Naperville, Ill., and Tulsa, Okla., and Minnesota Supercomputer Center, Inc. in Minneapolis. It built that infrastructure primarily in 1994 in partnership with 18 ATM equipment vendors and service providers for a project called the ATM Research & Industrial Enterprise Study (ARIES).

The Amoco-led ARIES project culminated in December 1994, with a technology demonstration on Capitol Hill (*NW*, Dec. 24, 1994, page 32). Project participants accomplished what they set out to do: Build a viable wide-area ATM network that used equipment and services from myriad providers.

In 1995, Amoco turned that demonstration network into the Amoco Information Infrastructure. (The American Petroleum Institute took over the ARIES project, which Beering continues to direct.)

"We had built a fairly substantial five-site ATM network, and we didn't want to tear it down," Beering said. That meant Amoco had to start paying for the ATM services, renew alpha and beta test agreements with equipment vendors and lease or buy other equipment it had borrowed for the project.

With a production ATM network in place, Beering knew he would have no problem supporting the video application proposed by the director of Amoco's business television network. The executive wanted to create video and audio content in Houston and ship it across the network for broadcast out of Chicago. This request opened the door to the virtual conference room.

"Obviously, our network is capable of supporting real-time video, so we hooked them up," Beering said. "But what we envisioned all along was to make that link bidirectional so we could create this virtual conference room."

For the conference room, a video camera connects to a special modem over a standard shielded cable. The modem, made by Fiber Options, Inc., connects to a mirror image on another floor via multimode fiber. The second modem links to a JPEG card in a Newbridge Networks, Inc. eight-port 36150 ATM switch.

National Television Standard Code video flows between Chicago and Houston at 12M bit/sec over a dedicated T-3 ATM link provided by LDDS WorldCom. Amoco uses this circuit specifically to test ATM-based applications, Beering explained.

To create the virtual effect, Amoco hung projectors from the ceiling and set up high-quality microphones. "You see the other side in production quality, in literally full motion. It's like watching a VCR," Beering said. ■

# IBM

*Continued from page 1*

hind IBM without access to the technology.

If that happens, customers could be limited in their choice of channel-attached equipment and lose a lot of flexibility in the way they configure their nets.

"Third parties would have to implement MPC, but we haven't decided whether to open it up to others just yet," said Jim Fletcher, senior technical staff member at IBM.

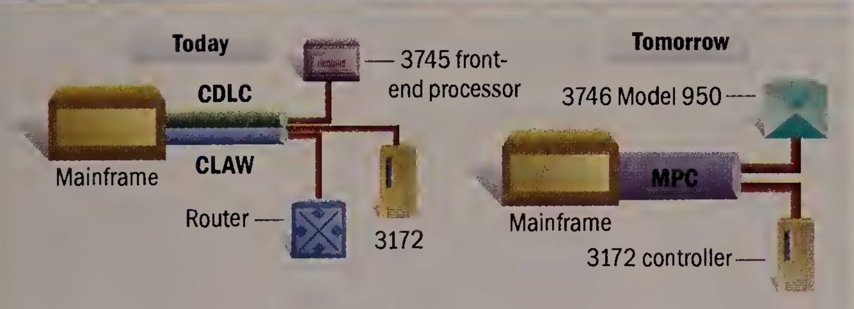
Fletcher claimed IBM is not trying to lock other vendors out, but actions speak louder than words. Sources indicate IBM has been quietly telling users MPC is on the way and it will obsolete other channel-attached options.

"IBM makes no secret that it won't fight fairly when it comes to the mainframe channel," said Dave Bryant, director of SNA technology for 3Com Corp. "If its intent is to make the mainframe the most ubiquitous server in the world, limiting access to it in any way is detrimental. On the other hand, it is a competitive advantage for IBM."

IBM's Fletcher said MPC would be a boon for users, promising increased throughput and performance with minimal change to existing networks.

"MPC is like an interstate highway where lanes can be added or subtracted depending on the traffic," Fletcher said. "Existing mainframe channel protocols act more like single-lane highways that will be outdated with the use of multimedia traffic."

**Fattening the channel**



IBM's MultiPath Channel protocol promises to improve throughout between mainframes and channel-attached IBM devices by "fattening" the channel. Today's Channel Data Link Control (CDLC) and Common Link Access to Workstation (CLAW) channel protocols provide a comparatively thin pipe.

MPC is technology IBM currently uses to communicate between multiple mainframes, where high-volume traffic is commonplace. The company, however, wants to move MPC support into VTAM and take MPC out to its own channel-attached devices, such as the 3745/3746 Model 950 front-end processors and its 3172 LAN-to-mainframe gateway.

The company is linking its High Performance Routing (HPR) technology with MPC to give users a high-performance channel connection with high availability.

Analysts said IBM is particularly targeting Cisco, which has gone after big SNA accounts with its router-based Channel Interface Processor (CIP). IBM has been on a CIP hunt ever since its introduction last year and has promised to "eat our own young" before letting any vendor cannibalize its channel-attached network sales.

Cisco officials could not be reached by press time.

Others see IBM's moves as just necessary preparation for its future Asynchronous Transfer Mode-based products.

"IBM's ATM plans call for the inclusion of the mainframe, and MPC helps ensure that the mainframe and its communications components will not be a bottleneck in the ATM world," said Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "I think IBM's concern about Cisco is about as big as a biting fly on a hippo — it knows it can roll over and crush it if it really has to."

But 3Com's Bryant said IBM's move would force third-party channel devices to communicate in the least efficient way with the mainframe in an HPR-based net.

"If the channel-attached device couldn't support HPR over MPC, it would be forced to communicate with the mainframe using APPN's Intermediate Session Routing, which uses the most mainframe CPU, memory and bandwidth possible to communicate over the channel," Bryant said.

"Any attempt by IBM to somehow restrict deployment of HPR smacks of being unethical in light of its licensing agreements with Cisco and others, plus it's not much good for HPR, whose industrywide acceptance is by no means an accepted fact," said Anura Guruge, an independent analyst based in New Ipswich, N.H. ■

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# Putting pen to paper: An open letter to Novell's head honcho

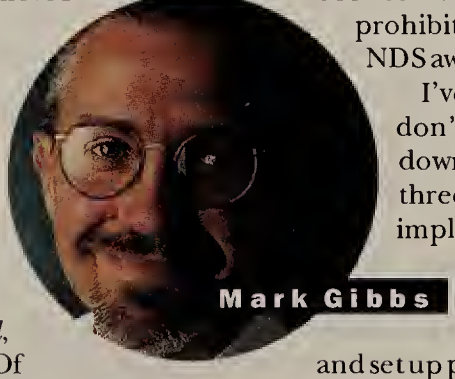
Dear Bob Frankenberg,

Now that I've moved from the electronic commerce section and can spread my net over a broader area, I thought I'd drop you a quick note.

Bob, I think you've got a little problem going . . . aw, why beat around the bush — Bob, you have a huge problem. And the problem is easy to define: Novell is in chaos.

I have had my suspicions for some time: When I called the other day to try to find out some product details in a hurry, I hit nothing but voice mail until I tried the presales group.

I cannot believe that in an organization of about 4,000, give or take a product manager, a warm body who knows the details of LAN Workgroup 5 wasn't in. (The number of employees staggers me. When I worked there, I believe I was employee 285!)


**Mark Gibbs**

I wouldn't have minded a little difficulty, but after two hours, my patience was wearing thin. And when I did finally speak to presales support and they found out I was doing some research for *Network World*, they wouldn't talk to me. Of course, they couldn't find anyone else to talk to me either.

I could go on about what's wrong with your customer service interface but I've only got so much space here. (Bob, have you ever called up your own company for technical or sales support? It is an exercise every CEO should do once a month.)

Anyway, I did find out what I needed to know through your Web site and calls returned the next day. But that wasn't and isn't the point.

While I feel you have a serious problem on the customer service front, I think you have a more serious problem with your flagship product, NetWare 4. Specifically, what you're doing — or rather, not doing — with NetWare Directory Services.

Now NDS is a superb piece of engineering. Sure, it still has scalability problems, but it generally works and it works well. Indeed, there is nothing like it on the market. (Bill's got nothing like it . . . yet . . . and Banyan seems to have disappeared into a black hole.)

But that doesn't mean you own much mind share outside of your user base. The big, wide world doesn't really understand NDS any better than it did two years ago. And the impact of the Internet makes it vital that you take ownership of concepts and techniques quickly.

*Bob, have you ever called up your own company for technical or sales support?*

Worse still, why is it that in Novell there is apparently so little support for NDS? Your just-released NetWare Web Server only runs on NetWare 4 and has no significant relationship to NDS. This is years after there was supposed to have been some sort of internal edict prohibiting the release of non-NDS aware products.

I've got an idea: Why don't you create a stripped-down version of NDS — say, three levels only — and implement it for Windows NT (stop spluttering, Bob). Make NDS operate over TCP/IP and set up public NDS servers on the Internet to handle intersystem naming.

Now, and this is the hard part Bob, *give it away*.

You heard me, for free, for nothing. Then if users want all the bells and whistles, they can pay for the upgrade. If your software works and covers up the hideous DNS system, you stand an excellent chance of winning hearts and minds. And wallets.

I think this idea has a lot of potential, and if you want to give me a call, we could talk about it.

So, Bob, let me wish you the best of luck. Managing Novell must be like herding cats. Novell has a history of great success, but now is the time to move decisively.

Just remember what Walter Winchell said: "Nothing recedes like success."

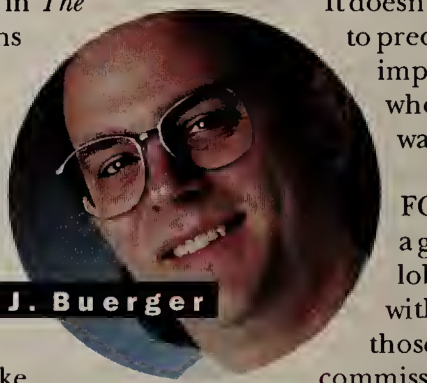
Yours sincerely,
Mark Gibbs

*Gibbs is a consultant and writer based in Ventura, Calif. Contact him at (805) 644-4999 or mgibbs@gibbs.com.*

# Glee for telecom reform gets dose of hard-headed reality

My new partner in back-page punditry, Mark Gibbs, might start a column about telecom reform with a quote from William Shakespeare. Yours truly never mastered the bard's prose, which means faithful readers are stuck with more mundane imagery, such as Munchkins.

"Ding, dong, the witch is dead!" was their bouncy, gleeful song in *The Wizard of Oz*. The Munchkins were happy; they believed the witch's death would spawn a wondrous era.


**David J. Buerger**

The recent signing of the 280-page Telecommunications Act of 1996 has resulted in similar glee among some industry Munchkins. But like the movie, benefits promised by the "death" of telecommunications regulation won't come until passing other unpleasant hurdles.

For one thing, the law does not kill regulation; it merely displaces it. Telcos and users will no longer fear U.S. District Judge Harold Greene and the Modified Final Judgment, which have governed practical aspects of AT&T's divestiture since 1984. The replacement is a new regulatory "man behind the curtain," FCC Chairman Reed Hundt.

*Congress and the president get the glory of rewriting a 62-year-old law; the FCC gets the you-know-what.*

The FCC's responsibility is about to skyrocket. Congress, in its magnanimous kowtow to industry lobbyists, decided to dump the "how" portion of telecom reform into the FCC's lap. Congress and the president thus get the glory of rewriting a 62-year-old law; the FCC gets the you-know-what.

First on tap is the process of churning out 80 or more complex rules (i.e., regulations), which govern the law's implementation. You know, easy stuff like figuring how and when local telephone monopolies have passed a 14-step competition test to sell long-distance service in their home markets.

New rules, of course, will be *slightly* more complex than usual. The reason: Their application will affect a larger and more diverse crop of telecommunications service providers.

As Wizard of Regulation, Hundt faces a quandary. He says his $175 million, 2,000-person agency is overworked and has asked Congress to add at least $10 million to his budget to handle administration of the new law. Congress, however, wants to whack the FCC's budget.

It doesn't take a rocket scientist to predict practical trouble implementing the law. But who ever said Washington was logical?

(Hundt's claim that the FCC is understaffed will be a gold mine for industry lobbyists. Now that work with Congress is done, those lawyers will chase the commission as if it were an ambulance rushing to the hospital.)

Another unmentioned but obvious hurdle is defining telecom service in a world of new offerings — at least as it applies to that motherhood-and-apple-pie notion of universal service.

Politicians are committed to universal service. Does that mean rich people will have to underwrite interactive video, voice mail and Internet access for the poor? Don't know. Guess our elected officials will let appointee Hundt make that call.

The non-deregulatory law will have an especially nasty effect on Internet users. Most immediate is the antismut provision, which prohibits transmission of "indecent" material over the Internet and on-line systems. The penalty is up to $250,000 and two years in prison. The Clinton administration said this provision "raises constitutional issues," but the president signed the bill anyway.

Internauts that use the 'Net to support voice and bypass telephone service providers should also anticipate more FCC intervention, as this threatens the equilibrium of the FCC's multibillion-dollar universal-service scheme.

Like industry Munchkins, I am glad that telecom reform has started. It's important, however, to control our glee. Regulations, unfortunately, seem like matter; they can be transformed, but not destroyed. Learning how to deal with mutations will take years and will be grist for curmudgeons like me.

*Buerger is an Atlanta-based writer and industry consultant. He can be reached at dbuerger@pipeline.com.*

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